Wildlife

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IN AUSTRALIA

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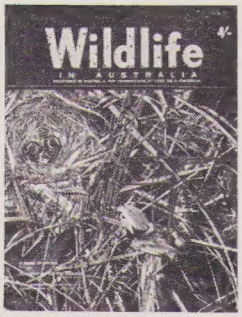
RESURRECTING EXTINCT ANIMALS
JOHN SIDNEY

THE CHANGING FACE OF THE COUNTRYSIDE . . . . ROMEO LAHEY



THE COVER

The Variegated Wren (*Malurus lamberti*) is one of the colourful Fairy Wrens found in coastal eastern Australia from southern Queensland to New South Wales. It differs from the better-known Blue Wren by having red on the inner wing. The female is a dull brown with a reddish-brown patch around the eye. Feeding the young is done by both parent birds, and often another young from an earlier brood will take on an equal share. After breeding the wrens forage for insects in small parties.

Photo by Barry Morgan.

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WILDLIFE

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WILDLIFE is published quarterly under the auspices of the Wildlife Preservation Society of Queensland by Jacaranda Press Pty. Ltd., 73 Elizabeth St., Brisbane. Any opinions expressed in this periodical are purely individual and the Society does not hold itself responsible for these opinions.

Annual Subscription 16/-, payable to Jacaranda Press Pty. Ltd., Box 1173P, Brisbane.

All correspondence should be addressed to the Editor at G.P.O. Box 1173P, Brisbane. The Editor reserves the right to alter unsolicited manuscripts in any way he thinks fit.

Printed in Australia by H. Pole & Co. Pty. Ltd., Brisbane. Registered at the G.P.O., Brisbane, for transmission by post as a periodical.

EDITORIAL

VOL 1 NO 3 DECEMBER 1963

Human Life versus Wildlife

WHICH is the most destructive of all animals? People who have seen what goats can do to destroy plant life and start erosion, might vote for the species Capra; others might think of rats, foxes, and so on. They would be wrong. The creature that has had by far the most effect, in extinction of other species and in the alteration of the earth's natural cover, is of course *Homo sapiens*. And in this twentieth century, he is destroying more than he has ever done before.

What is more, it looks as though very few indeed of the small mammals, and even fewer of the larger mammals and birds, stand much of a chance against him in the next few decades. *Homo sapiens* is increasing to such a degree that it has been calculated that at this moment the earth's surface contains more than three per cent. of all the men who have ever been born since the species emerged. That is to say, three in every hundred of all men, historical and pre-historical, are living now: something like three thousand million of us.

That three thousand million sounds quite a number, but by the end of the twentieth century, at present rates of increase, we will number six thousand million; and, of course, the figures won't stop there. Unless we can manage somehow to arrest this tremendous increase, or unless nature or our own warlike tendencies take over the job, we will continue to increase until we destroy ourselves. But wars, as we have known them so far, will not make much difference. In an article in the August number of *Oryx,* the journal of the Fauna Preservation Society in England, Colin Bertram points out that every four hundred days, at the present rate of increase, we are replacing the total number of people killed in World Wars I and II.

Now, what about the animals and birds that also inhabit this earth? Are they also increasing? On the contrary, we are daily destroying more and more of their habitat and killing more and more of them to add to the protein intake of undernourished populations whose agriculture and food production are not keeping pace with their increase. The animals that man himself supports are themselves making tremendous inroads into the living of other creatures. Man supports and breeds — directly or involuntarily — cattle and sheep, those hard-hoofed grazing animals that are often a potent cause of soil erosion where husbandry is bad; goats, which are responsible for more destruction than any other hard-hoofed animal; cats and dogs, both protein-feeders and killers of wildlife; mice and rats, which follow him wherever he goes, and are themselves responsible for much damage to birdlife, seed and grain. What chance do the dwindling species of non-domesticated animals and birds stand against the cohorts of *Homo sapiens?* Little indeed, unless we begin to realize their plight and set aside areas where they can survive in their own fashion — areas as large as possible, secluded from destroying influences, protected from man himself, by all the legal safeguards man can invent.

Australia, the last settled of the continents, must take warning by what has happened in denuded, forestless countries like Greece and Spain and North Africa, by what is happening elsewhere. Let us plan now for wildlife reserves wherever they can be made, and for sane programmes of conservation in every scheme of development we undertake.

LETTERS TO THE EDITOR

Having been responsible for portion of the field notes in John Orrell's paper 'The Oriental Cuckoo,' *Wildlife No.* 1, I feel I should clear up one or two points mentioned by Mrs. Barbara Salter. (1) I still believe the 'Oriental' to be a rare Cuckoo—recent sightings mentioned by Mrs. Salter would need to have some confirmation, such as detailed field notes. A recent sighting reported to me proved on investigation to be a Barred Cuckoo Shrike. (2) Regarding 'Covered Nests,' the covered nest of a Finch would not be suitable for a Cuckoo as Finches are seed eaters and Cuckoos insect feeders.

In a recent discussion on Cuckoos with American ornithologist Ben King, who recently was in Korea, he told me that there were two phases of this Cuckoo, one the commoner grey phase and a rare phase, the 'brown.' He suggests the bird I described was the rare brown phase and not an immature 'Oriental' as I had believed. Mr. King met many Oriental Cuckoos in their Korean breeding areas; he also mentioned this cuckoo may not breed in Australia.

As a Queenslander born in Victoria, I mention the Queensland bushlands get a full quota of rubbish too, and we do not use paltry rifles and shotguns to destroy our wild life. We do things on a more majestic scale, a recent example being the 'Iron Range blast.'

J. A. BRAVERY.

Dear Sir,

I enclose my cheque for 16/- and request that I be enrolled as a subscriber starting with Vol. 1 No. 2 please.

May I take this opportunity of congratulating you on the quality, presentation and content of the magazine. Whilst recognising that "Wildlife" is the 'child' of the Wildlife Preservation Society of Queensland, one hopes that it may become Australia-wide in content rather than be confined essentially to articles with a Queensland slant. There is certainly a great need for such a magazine and an Australian "Wildlife" could have a great future.

Once again congratulations on Vol. 1 No. 1 of "Wildlife" and may it have a long and successful life.

Yours sincerely,
IAN GRANT.

Sir,

May I congratulate you once again on a very fine issue of 'Wildlife in Australia', both from the point of view of content and production. I feel that this journal is a major contribution to conservation in Australia.

May I be permitted to make one criticism of Vol. 1 No. 2? In your interesting editoral your first statement reads: When white men first came to Australia they came to a country in which the balance of nature was undisturbed. It is to the phrase 'balance of nature' to which I refer. I understand what you mean by this, but I feel that the use of such a phrase is somewhat misleading. For there is no real 'balance of nature' but perpetual change and while the advent of the white man in Australia undoubtedly affected the lives of many indigenous species of plants and animals and contributed to the loss of some of these, this alteration in ecology is one which is happening all the time, sometimes slowly and sometimes rapidly. What we really need to stress, I feel, is that with a deeper appreciation of the aesthetic values of our natural environment and a better understanding of its ecology a different approach could have been made to land settlement and much of our bushlands been left to follow the line of development which would take place without the vast clearing that occurred.

This may seem a trivial point to you since it is true that white man has, indeed, been responsible for a considerable alteration to the ecology in Australia. I am writing, however, from the point of view of the untrained reader who, as I know from experience, so often interprets the phrase 'balance of nature' as a state in which plants and animals live in nature in a state of harmony and continue to exist in the same form for ever, whereas species are constantly disappearing and new species developing, whether disturbed by man or not.

Yours sincerely,
THISTLE Y. STEAD,
Wild Life Preservation Society of Australia.

Dear sir,

Herewith, please find manuscripts of two short stories for children.

Both concern Australian animals and their evolutionary aspects, and although fictitious, are based on scientific fact.

Apart from being a zoologist, I have had some art training and would be happy to illustrate the stories, should they be published.

Yours faithfully,
R. S. PARNELL (Mrs.)

After reading your Editorial in *Wildlife*, I feel compelled to draw your attention to an area of land on Elamon Creek, Maleny district, which would be very suitable for the preservation of wildlife, as well as a camping and picnic area for visitors.

I myself have seen many varieties of bird and animal life in the area, which is very pretty, containing as it does much fern life. My wife and I would be pleased to take visitors to the area at any time. We have permission from the owner to go on to the area at any time.

It would be a pity to have this piece of scrub land lost as a reserve to the nation.

Yours sincerely,
H. A. POMROY.

Dear sir,

I have just read some of your magazine, "Wildlife", Vol. 1, No. 1, and I write specially to commend you on such a fine effort.

Although I am only a bit of an amateur naturalist, I do appreciate reading articles about our wild life which have the ring of truth and scientific opinion about them.

Please find enclosed cheque to value 16/-, being annual subscription.

Yours faithfully,
R. J. LANE.

Dear sir,

I am enclosing a cheque for 16/-, as my annual subscription to your periodical "Wildlife".

We have been extremely interested in the copy we have, and I would like to take this opportunity of congratulating you on the excellence of this publication. The majority of these publications deal with overseas wildlife, and there are only too few recording the fascinating stories of our native flora and fauna. Therefore it was a pleasant surprise to see "Wildlife" at our local Newsagent's, followed by pleasant and instructive reading.

I trust this will be the first of many Volumes, wherein our young people will learn to appreciate and, more important still, preserve, our unique plants and animals. That this can be done has been proved at our nearby Stoney Range Flora and Fauna Reserve, where many people, including school children, follow the first "Guided Nature Trail" in Australia. Perhaps at some future date we may see an article on this subject in your magazine.

We will all be looking forward to receiving our next copy.

Yours faithfully,
M. B. GRIEVE (Mrs).

The Variegated Wren

(*Malurus lamberti*)

By Noel Jack

THE Variegated Wren (*Malurus lamberti*) and the Red-backed Wren (*Malurus melanocephalus*) are our main representatives of the 'Fairy Wren' family in the Brisbane area. The Blue Wren (*Malurus cyaneus*) is now a very rare species here, though plentiful elsewhere.

I got to know the Variegated Wren quite well in the past. Invariably, on following up the information that somebody had seen a 'blue' wren, one would find that it was *lamberti* and not *cyaneus*. Sometimes the informant took a lot of convincing.

The Variegated or Lambert's Wren is a representative of the 'chestnut-shouldered' group of wrens. Seen in all its full glory it is doubtful if it suffers much by comparison in a family that is noted for sheer beauty and elegance. Being gregarious, it is possible to see two or three fully-coloured males in company; and, possessing the *Malurus* habit of being susceptible to an imitation of some of their notes, it is quite easy to call them up. Nesting birds become quite agitated and perform a 'distraction display,' or the 'broken wing' trick, when their young appear to be in danger.

It shows a preference for undergrowth, particularly the introduced lantana, and occasionally ventures into the open, where it may be seen in company with its relative, the Red-backed Wren, which seems to prefer the blady-grass and more open country. With much animated chatter the two families exchange greetings, and the bird-watcher records it as a red letter day in his diary. Even the most sophisticated of bird-watchers still remain susceptible to the charms of the Fairy Wrens.

The nest is an oval, dome-shaped structure, built of grass and bark, with an opening on the top or the side, generally on the ground, in a tussock of grass. The birds are double-brooding and often the first family assist in feeding the second. Normally built in the spring, it is a tribute to our climate that autumn and winter nests are not uncommon.

It is a sedentary species, but it indulges in some 'local movements' at times. I have several records of a family of them seen in my garden at Paddington during the summer months, the nearest bush being some miles away. It is well established around the creeks and gullies of the Taylor Range and similar places.

I strongly recommend that you make the acquaintance of at least one of the Malurus Wrens in the field. Assuming that you have not already done so the experience is one you will not forget. You are liable to become a bird-lover on the spot.

Variegated Wren (female).

Variegated Wren (male).

Middle Harbour Creek and Davidson Park, looking towards the inner suburbs.

Wildlife in

WHEN I returned to Sydney after some six years in the cities of Western Europe, it was the living interpenetration of nature and metropolis that struck me as being the distinctively Australian element of our east coast cities. Nearly five years later it is the blindness of the native-born Australian to nature that strikes me as peculiarly Australian, while tens of thousands of our European migrants have been attracted, consciously and unconsciously, by the image of a city life closer to nature than could ever be the case in Europe.

In the co-existence of natural and city life is the possibility of something unique and of enormous value: it is the possibility of a new kind of modern city; a city that permits the natural world to extend to the walls of the steel and concrete heart; it is the possibility of assembling and housing huge populations in the concentration demanded for economic life, yet still in contact with the natural world.

Topography is the key: in Sydney sandstone ridges and valleys and Pacific cliffs and beaches enforced the interpenetration of nature and city. Along arteries of bush nature pulses through the city to the harbour front; the suburbs are a mixture of scrub and supermarkets, asphalt, steel, sandstone, and gum-trees. Spilling off the ridges, the mess of brick, tile, fibro, galvanized iron, concrete, paling fences, rotary clothes lines and abandoned rubbish peters out among the trees; is stopped by estuaries, creeks, lagoons and harbour coves.

In the past the real estate man has stopped at the boulder-filled, knife-cleft gullies thick with fern and scrub; houses have skirted the soilless sandstone tops. Accidents of topography have preserved the rags and scraps of nature's fabric, and shaped, limited, and thwarted indiscriminate urban growth.

Every forgotten tangle of scrub or overgrown creek is a home for lizards, spiders and the occasional snake; it is a base of operations for possums, bandicoots and rabbits, a sanctuary for birds and a challenge to venturesome children. And the tiniest islands of scrub and blackberries behind the paling fences and across the

Black Cormorants (and Seagulls) at Dee Why.

Suburbia

By Bruce Semler

ends of one-way streets are not yet completely isolated: finches and honeyeaters, lizards, snakes, spiders and insects — one migrating population — link the smallest thickets with the nearest bush reserves and sanctuaries, and link these in turn with the sea of trees that twenty to thirty miles out encircles and contains the city, cuts it off, and distinguishes it in character from the once-typical Australian hinterland behind the coastal fringe.

THROUGH the city itself creeks and estuaries link the sea directly with the larger forest fragments. The lush bush along the valley of the Lane Cove River still runs almost unbroken from north-western suburbs to harbour water; to the south, Royal National Park — perhaps the finest wildlife sanctuary within easy reach of Sydney — fringes Port Hacking; Georges River with its many branches and ragged inlets, and tiny Cook's River penetrate and separate the flatter suburbs behind Botany Bay. North of the harbour the select North Shore suburbs are separated from the sea by Davidson Park — a fine strip of bush on either side of Middle Harbour Creek — and French's Forest. Large virgin areas extend from Pittwater and Kurin-gai Chase around the northern and north-western limits of the city.

In this configuration, where the natural landform has so far shaped the city, is — or was — the unique opportunity to create a distinctively Australian urban life.

But Australians are destroying this possibility. The city bloke is in the majority, and the city bloke has little awareness of nature and no inbred orientation towards the bush and its creatures. The city bloke prefers the neatness of cement and asphalt to the ragged eucalypt and sandstone, and the engineer now builds up and down the ugly bones of ridges stripped bare of twisted Sydney red-gum, banksia, bracken and spiky, tangled undergrowth.

There is still a tremendous total area of natural bush within the limits of the Sydney area, but every part of

One of the countless small Goannas beside the Lane Cove River.

An Albatross watches dawn fishermen in winter at Malabar.

it is being consumed from the edges in; it is only a matter of time before the houses on the ridges look down on tile and tin in the bottom where the green valleys were. The finest areas of nature in the city today are all in valley bottoms.

Elouera Reserve, Galston Gorge, and the beautiful Fox Valley — all within the northern suburbs — are deep valleys protected by grotesquely weathered sandstone bluffs and steep exposed ridges topped with bristles of dense, spiky scrub.

A rich volcanic pocket forms a tiny valley floor in one corner of Elouera Reserve; it supports a stand of fine gums and blackbutt a hundred yards or so across. Fox Valley — part has recently been released for real estate development — shelters in its steep gullies the most luxuriant sub-tropical 'jungle' within the Sydney area. A rich rain-forest of tall blackbutts takes the place of the usual open stand of Sydney red-gums, and fern and undergrowth is thick between the massive sandstone blocks piled in the valley bottom.

Until a mere three or four years ago the isolation in these valleys was as complete as in the remote, deep gorges of the Blue Mountains: the only reminders of the city on the ridges were walkers' tracks and the comparative absence of larger animal life. Today the houses breast the ridges and a mixed stand of TV aerials and rotary clothes-lines is planted on the stony tops.

EACH park, reserve, or sanctuary has its own charm of topography or location, of plant or bird life. The harsh, ant-infested scrub on the rocky, almost soilless, sun-exposed north-facing ridges often hides weathered sandstone of weird beauty; the V-gullies that nowhere give flat standing-room are rich with striking details of rocky shapes, shallow pools, and plant and insect life. The ridges in Elouera Reserve have fantastically caverned slopes; the gullies of Fox Valley are fantasy worlds of nature detail. On the damp north bank of the Lane Cove River splendid grass-trees gleam yellow and green between Sydney red-gums whose pitted bark is red and blue by seasons, and tea-tree thickets are alive with finches; on the dryer, southern side, black and twisted banksia trunks top the orange, red, and blue-green sandstone clefts and ledges.

The bird population within the city is amazingly rich and varied. Other animal life must be devotedly sought after and watched for: with the birds it is simply a matter of looking.

Most local birds cross the seas of houses from time to time on passages between the major continents of bush, but with eyes on the footpath or the asphalt strip the city bloke sees them less than they see him, unless he crosses deliberately from his territory into theirs. In the tops of the tall trees of Fox Valley and Davidson Park rosellas are common; in typical straight and level flight they often cross the northern suburbs, making stages in isolated stands of trees. Any householder beyond the inner city will see the peewees, magpies, kookaburras and pearl-grey cuckoo shrikes, and will awaken now and then to the bell-clear call of the pied currawongs — all cross easily from bush to backyards and back again.

In the bush beyond the houses birds are numerous, shy, and varying with the place. Finches and honeyeaters are common in low, dense brush, and anywhere where water soaks from sandstone the smaller birds come to drink; in moist gullies, whip-birds and thrushes are plentiful, blending with the mottled light.

In a canoe or light skiff, Middle Harbour Creek can be followed at high tide until the branches meet overhead. The scrubby, rocky banks fall here and there to strips of sand; she-oaks with green and russet tips run thickly to the water; among the mangroves blue herons stalk and turquoise kingfishers can sometimes be seen. Behind the sandhills of Dee Why beach a reed-fringed lagoon makes an ideal sanctuary for marsh and water birds. Gulls flock in hundreds to the lagoon; it is a home for cormorants, coots, herons, and brown duck on and near the water; the reeds are populated by plovers, quail, tiny reed-warblers and the magnificent indigo-breasted water-hen with crimson comb and legs. Black swans visit the lagoon and cattle egrets spent last winter there.

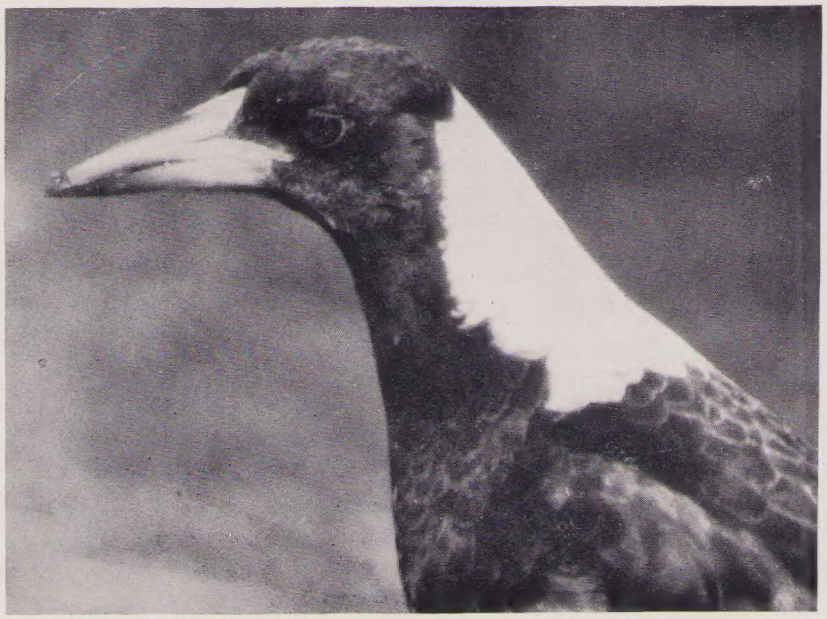
A few miles north of Dee Why, Narrabeen Lake links seafront and open beach with dense bush along the creeks at the head of the lake. Strings of black swans, flocks of cormorants, and brown duck, herons, pelicans and plovers are numerous there; sometimes one may be lucky enough to see a crane.

Between the front line of houses and the open sea or broader harbour water are reserves such as North Head — a windy, healthy spot with fine views south and up the harbour — Dobroyd Point, Ball's Head and Berry Island, and low-tide walks between ocean beaches and under overhanging cliffs. The tiny valley of palms at Bilgola, the volcanic outcrop of blood-red rocks at Long Reef, the sandhills north of Cronulla beach and the low, rocky shore south of it — all are yet unspoilt frontiers of city and sea.

GULLS and terns at most times; flocks of mutton birds in season; albatrosses, gannets, and giant petrels in winter can all be seen off cliffs and beaches, especially south near La Perouse. Both bush and seafront are unexpectedly alive with incidents of natural life. In the coves of Middle Harbour the crows gather at low tide to feed on oysters on the rocks; on Middle Harbour Creek I have often seen the white-breasted sea-eagle, and I have watched another swoop for fish off Manly beach in the company of a pair of gannets diving superbly. Lane Cove National Park is the most popular of all reserves with picnickers, but at sunrise turquoise kingfishers play on the river, and I have seen a brown bittern in mangroves not fifty yards from the busy road; at dusk the same area is alive with small goannas. Between the bushes on windy ridges in many spots the great *Nephila* — the 'bird-catching spider' so-called — strings ten-foot wide webs. Diamond snakes have been found in Galston Gorge and in the western suburbs, and a variety of venomous snakes is seen occasionally in many areas. Last autumn I watched a five-foot-long black and yellow-barred goanna fling itself on to a flying phalanger in a secluded pocket of scrub by the Lane Cove River. In two minutes the ball of fluff was swallowed, the goanna silently slipped like a shadow from the tree he had climbed to feed in peace, and the terrified mate of the victim, clinging like thistle-down to the side of a sapling, looked around for safety.

Nature life within the city still seems rich enough; the question is how long there can be any, when thin scrub that took millennia to grow is brushed away and the rubbish and the beer bottles trickle ever further down among the rocks.

The giant birds of the open sea are no doubt safe enough, although where the sea-eagles will nest near Sydney in years to come is hard to say. Bulldozers and brash real estate men are already exterminating wildlife in suburbia, and burying for good a unique opportunity to create a new concept in city life.



Magpies are equally common in bush and suburban backyards.

Never a Dull Moment

For the Naturalist's Wife

By Jane Wilkinson

HUSBAND picked up his overnight bag, gave me a perfunctory peck, and with 'See you next Friday night,' kicked his motor-cycle into life and started off. Suddenly he slowed down, eased the throttle so that his stentorian voice could be heard over the cycle's roar and added as an afterthought: 'Oh! — and pay the electricity bill — the cheque book's in my drawer.'

A wave of his hand and he was gone, away to the Tableland and his engines. Only another six months, he had assured me, and I'll have ticket-time in and then it's home for keeps! I turned towards the cottage and the task of getting the evening meal for the children. It was not until late that night I remembered the electricity bill. Husband is a moderately methodical person, and the account was clipped to a board-file above his desk. Absentmindedly, whilst checking the account (I come from generations of Scots ancestors), I opened his desk drawer and groped for the cheque book. Something cold and slithery passed over my wrist. Horrified, I glanced down. A snake!

Quickly slamming the drawer shut, and almost amputating a finger in the process, I anathematized a spouse who left snakes lying around with cheque books, glanced at the clock — the exchange *would* be closed — and resolved that I'd let the Board cut off our electricity supply before I'd try to pay that bill.

On the phone next day he appeared quite casual about it. 'Oh! *that!* Forgot to tell you. Quite harmless, it's a Children's Python, wanted to bring it up here for Lloyd's collection, but clean forgot. Leave it where it is and it'll be O.K. They can go quite a while without food and it has a bulge. Probably sleep all week.'

I gave up. I should have known better than take him to task. After being married to a naturalist for fifteen years I should have been prepared to accept anything from snakes-on-the-cheque-book to car-crashed barn-owls.

For the past ten years my husband has been a serious naturalist. In addition to his normal work — rather precarious when one has to depend on the intermittent nature of the cane crushing seasons — he conducts two 'Nature Notes' features, one a fortnightly column in the local paper, and the other a monthly page in a northern periodical. Until his editors gave him the by-line, life was interesting. After the by-line it became hectic.

Our home is a small one, erected originally as a temporary dwelling when we selected the block. Adverse seasons and a cannery failure made the temporary almost permanent, and the addition of sundry specimens brought in by correspondents to husband's 'Notes' have often cramped our living space. But looking back, it's been worth it — all except the snakes!

There was Titus the barn-owl. He arrived at 2 a.m. one winter morning after a motor-bike ride in my husband's overalls. A workmate had brought him in, victim of a hit-and-run driver. Blood and feathers — and the most appealing eyes you ever saw! For two days he lay on our lounge, immobile and scarcely breathing, but care and attention, plus force-feeding with raw meat balls, soon had him on his feet. I loved Titus. He would perch, grave as a presiding judge, on the bookcase watching me as I went around the household chores. When feed time came, he would 'wind' his neck in anticipation of the meal to come, but wouldn't eat of his own accord. His beak had to be carefully opened, the food placed in, and then he would condescend to swallow. Being nocturnal, as he regained his health, his flopping around the tiny kitchen often kept me awake at nights, but his obvious gratitude for anything done for him was reward enough.

My husband took him to the local school and gave a nature talk on owls. What he didn't know about *Tyto alba* and his kin hadn't been written — or so he thought. Proudly he graded his talk — simple for the smaller children, and then more technical as the seniors were brought in.

'I finished up,' he told me, 'with a decent sort of diagram showing how the hard-feather mask acted as a sounding board, showed the kids his big ear-holes, and explained just how Titus could come in on the beam in total darkness. Thought I had it all sewn up. And then one kid asked the sixty-four-dollar question. Girl. "Please sir," she says, "Is it a white-fleshed bird or a dark-fleshed one?" '

I asked him how he got out of that *one,* but it takes a lot to disconcert a practised naturalist. 'I just said that it was a very intelligent question, and allowed the little girl to look. Every kid in the school had been itching to handle Titus, and she thought that she'd won the lottery.' As an afterthought: 'By the way, they're dark-fleshed' . . . Titus eventually went to the Fleay sanctuary, and fully recovered, was liberated.

THERE was Bertram — quarter of an ounce in weight — brought in by a little girl who found 'pussy playing with the pretty mouse!' The 'pretty mouse' was an immature bat, but weak milk through an eyedropper and a safe camp on one of the indoor plants had him on his feet (or rather wings) in four days. Bertram was followed by Hector. I had a twinge of conscience about Hector, but hope that I expiated my fault. I saw the nest high in the lady finger banana, but as there was no parental activity, I concluded that it was deserted, and wielded a cane knife to good effect. Down came the tree and I severed the bunch, shaking the nest free. To my horror, six fledgling finches tumbled out on to the ground.

Here was a problem! I was duty (and conscience) bound to rear them, but six baby finches! Housed in the canary cage they soon took to the perch and lined up in military order, apparently quite contented with their lot. Feeding time was a problem, as a mash had to be made

of weetbix and milk, with a drop or two of codliver oil. This mixture they took from the end of a sharpened matchstick. Covered against the mosquitoes at night they appeared quite contented, but Tuesday came around as inevitably as Christmas. Tuesday is our Town Day (both capitals). What to do? It would be impossible to feed them two-hourly whilst making the twenty mile return journey on the weekly shopping trip. Husband conceded that perhaps they could manage six hours without food, so the cage was hoisted clear of the cats, and off we went to town, working to what the naturalist said would be a 'tight schedule.' Five hours and twenty minutes after leaving, we returned, and were amazed. Practically every Redbrowed Finch in the district was congregated on the lawn, busy finches were conducting a combined air-lift to the little prisoners who were showing distended crops and contented countenances as a result.

After that we just placed the cage on the lawn and left the rest to nature. Even a Strawberry Finch tried to join in 'Operation Orphan Feed', only to be soundly trounced by two birds with a proprietary interest in the sextet — obviously the parents.

Husband made copious notes regarding the feeding habits of the young and each night let the captives out of the cage. One by one they gained the top limb of the currajong, Husband's test for their final liberation.

All except Hector. Hector, with feed laid on, mosquito-proof quarters, tons of T.L.C., had no intention of leaving, and became quite a pet. Daily the parents came and 'talked' to him, but he seemed to realize that a full flight up to the top of the currajong would mean banishment, and a feeble flutter to a lower branch was his best effort.

Came Tuesday again, and not having a 'tight schedule' we stayed out until 6 p.m. When we returned the cage was empty. Hector had joined the flock.

Through husband's 'Notes' it became known that we ran a voluntary hospital for sick animals and birds, and many and varied were the patients. We had one inflexible rule — all 'patients' had to be liberated on recovery, but this did not deter a persistent lady (husband's term: 'obnoxious old bag'), who pestered him for advice regarding her parrot — a cage bird and therefore not recognized by a naturalist — which had lost all its feathers. Only my earnest pleadings prevented him suggesting that she knit the bird a lambswool suit! Having seen the old dear, I think that she would have done it.

The procession has been varied — a Red Necked Rail, a Black Duck, a Noisy Friar Bird — all were 'two days stops' — quickly recovered and soon on their way. Ptolemy was an injured ibis, and to our great sorrow fell victim to a snake — as did two of my best laying hens during the same week.

Even insects have not been refused admission, and a family of Phasmids were actually transplanted from the Atherton Tableland to the coastal climate for detailed study. These insects can almost be made into pets, and 'Belinda I' was succeeded by 'Belinda II' and 'Belinda III.' The progeny of the latter are now in their mating stage.

MICHAEL arrived during the Governor's visit. Shanghaied on the City Council grounds, his damaged wing was a mighty mess when he arrived, and the children were kept busy collecting live grasshoppers and small insects to keep him alive. Chilled in the refrigerator, they evidently suited his palate, and after the evening meal we would feed him his ration. Mike was an Owlet-Nightjar, and soon became a recognized pet, answering with a quick toss of the head when called. As he recovered and the wing mended he showed resentment as he was put to bed at night. Naturally enough, being nocturnal, sundown was his getting-up time. For a week of nights I sat up with him, often to 1 a.m., and then came the great day when he made a full circuit of the house, and caught a moth on the wing.

Naturalists' wives must get used to children like this.

Much as I loved him, I knew that it was time for him to go, but I let him choose his own way. At sundown next day I liberated him in the kitchen. Our cottage is, as already explained, 'temporary,' and near the bedroom window there is a gap between wall and roof. Mike flew straight for this, clung agilely to the wall, gave a quick look back as though to say 'Thanks for everything,' and flew into the deepening twilight. Sometimes during the night we hear the 'Chop-chop' which marks his kind. I like to think that it's Michael.

Caterpillars arrive regularly, and are faithfully pupated and hatched. Often the result is disappointing — a magnificent caterpillar can become a dull and uninteresting moth. Case-moth larvae inhabit glass topped boxes in Junior's room, their silken ladders a testing ground for husband's photographic prowess. My new refrigerator, dreamed of for years, somehow became a single lens reflex camera with a telephoto lens. Seldom is a meal eaten in entirety. 'Have to take those prints out of the hypo, back in ten minutes,' or 'Sounds like a small frog — better get it, because Clarence hasn't been fed.' Clarence, by the way, is the python, all eighteen inches of him. Even my hatred of snakes has disappeared under the spell of living in a family to whom the whole

Trees Are Your Friends

By Len Webb

BETWEEN the magic cradle of a seed and the board of your table stands a splendid shady creature called a tree. Trees come in different shapes and sizes — lean and hollow, plump or tall, all wearing bark girdles against the fire and winter, all crowned by green. They stand in the snow and even the desert, anonymous except to a handful of botanists; unknown because they are accepted, they never speak. They have no weapons and their only gesture is to be cool and gracious and useful to us. Trees are found everywhere — on mountains and on beaches, scrabbling a foothold in the arid rocks, fingering some deep soil, or idly paddling in the sea — tall as giants, small as dwarfs. Everywhere their limbs reach out for the sun, and their roots drink of the earth. The city dweller may ignore them and shun them, yet is bound to escape from barren streets and seek their comfort. All of us, deep inside, love trees. We love trees because they knew these hillsides long before us and our fathers; they have waited patiently here for us, sweetening the air and now gladdening our eyes.

What is a tree? Is a tree just a lump of wood crowned by leaves? A tree is truth with a nail in its side, beauty built out of air and stones—mellow in death, lively in spite of human foolishness. Trees adore wind and birds, sunlight and sweet air, kookaburras and cows, raindrops in the quiet evenings. Nobody but a plant can dine so noiselessly, and on such strange foods as the invisible carbon of the air and the harsh minerals of the ground. Nobody but a tree can grow so huge — not even whales and dinosaurs. Nobody but a plant has green blood to capture the energy of the sun. Trees have no blood banks to succour them after fire and mutilation, yet without the green stuff of their sap, there would be no redness in animal blood, no sun's energy and no life for us who cannot dine on dust. A tree is a magic creature, whose ancestors are lost in the mists of time, who came before man, and stays after him. You may maim them, uproot them, spoil them, but you can never destroy them. Their life glows in a speck inside a flower, and their greenery will filter the sun above your grave. You might as well give up! Trees are your friends!

NEVER A DULL MOMENT — *Continued*

of nature is a vast and marvellous wonderland, which just *has* to be explored.

I can't plan a week-end. Proposed picnics just vanish against such arguments as 'The back pool at Gordonvale will be just right today. Want to get some of those snails for the Brisbane bloke.' So off he goes with Junior, returns looking like something the cat dragged in (and smelling worse), but highly delighted because he carries a tinful of truncated snail shells.

THAT night, when dinner-jacketed and as he calls it 'uncomfortably respectable,' he was off to a formal occasion, I happened across one of his letters (I'm his secretary at times, too). It was from the University of Queensland. Could my husband collect specimens of the family Thiaridae? The taxonomy of this species had been confused by earlier workers and North Queensland specimens were needed. There followed details of the necessary precautions required to ensure that the specimens were correctly prepared for laboratory research.

I began to realize then that this study of Natural History is more than 'just a hobby,' and perhaps a boisterous one at that. On the field naturalist, the man who can 'go hunting snails for a bloke in Brisbane,' and then send Thiaridae to the helminthologist of the State's University (and there are hundreds of field naturalists like my husband), depends much of the research work done in our great institutions.

Mechanics, carpenters, engine-drivers, clerks or labourers by day, in their spare time they're specialists in their chosen hobby, and eager to assist the advance of science.

Just ordinary people in ordinary jobs.

But if you're married to one of them — you'll never have a dull moment.

TWENTY ANIMALS, ONE MAN

BERNHARD GRZIMEK
(Published by Andre Deutsch, London) 1963

DR. Grzimek's name is probably known to most people. Director of the Frankfurt Zoo, he is the maker of the two most famous films of recent years dealing with conservation problems — *Serengeti Shall Not Die* and *No Room for Wild Animals*. Both these have appeared also in book form, and Dr. Grzimek is the author of several other books, including *Dr. Jimek, I Presume*.

The foreword to *Twenty Animals, One Man* speaks of Grzimek's 'decision to dedicate his whole life to animals — "those citizens of the world" which, though they have a legitimate place with us in the countries of the earth, we are constantly displacing, killing and wiping out.' In the course of this work, the author has travelled many thousands of miles, observing animals in their natural surroundings as well as collecting specimens for his own zoo — one of the most famous zoos in the world. He is certainly qualified to speak of them with authority.

However, expert as the author is, both as zoologist and publicist, the book is at times a little disappointing. It is made up of separate essays, some full of interesting facts and opinions, some seemingly put in to make the others up to book-length; this scrappiness is not improved by an occasional clumsiness in translation. But Dr. Grzimek's knowledge and enthusiasm carry the book through, and it is certainly one well worth possessing.

The first chapter tells of the experiences of the Grzimek family in rearing three baby gorillas in their home in Frankfurt. Thomas, Carlo and Rafiki were between one and two years old when brought to Frankfurt, and required the same care as human children of the same age. Like human children, too, it soon became apparent that each of the three had his own character and special way of reacting. The account of their year in a human environment, though interesting, is very brief; one would like to see a much more detailed study of their growth and adaptation. Perhaps Dr. Grzimek has published such a study, but it is not mentioned.

The chapter on seals probably contains more interesting information than any. Dr. Grzimek tells us that seals are the most numerous of the world's animals, three million saddle-back seals having been counted by the Russians in the

'Seals are the most numerous of the world's animals.'

'Since the seal's coat is not waterproof it is protected from the icy water by a thick layer of blubber.' The pictures on these pages show the first sea lions born at The London Zoo.

White Sea area alone. There is an account of the seal's insulation system which many will find interesting. Since the seal's coat is not waterproof, it is protected from the icy water by a thick layer of blubber; but when swimming fast for long distances, this would make it unbearably hot, if it did not have a cooling system as well. The seal therefore is capable of discharging this built-up internal heat by engorging parts of its surface, especially the underside, with blood. As a very large proportion of the seal's weight is blood (15 per cent. compared with 6.6 per cent. in humans), enabling it to stay under water for long periods without extra oxygen, this cooling system is thoroughly efficient.

SEALS, it seems, like human beings, can become sunburnt when exposed to sunlight for too long; a more unexpected fact is that, when being carried on shipboard, they can also become seasick. Their habit of swallowing quantities of small stones has been known to mislead geologists, who, finding the stones on far-off islands and beaches, do not realise that they have been brought by seals, rather than occurring naturally.

The story Grzimek has to tell of animal migrants or introduced animal pests is interesting enough; it seems that most countries suffer from such introductions as we do in Australia. However, Grzimek is not always accurate in his statements. For instance, he states that foxes and cats were imported to Australia by farmers, to combat the rabbit plague — whereas, of course, foxes were imported by Hunt Clubs into Victoria, as early as 1845, while it seems likely that cats came with the first settlers. He does not mention the introduction and spread of the cane toad, nor the deer pest in New Zealand, which is currently causing so much concern to forestry experts there and is the root cause of so much alarming erosion in steep forested areas.

Though the book suffers from its scrappy treatment of large subjects, it should help in arousing interest in the study of animals, and in their preservation, among the public to whom it is directed. For the specialist, it is not likely to be of so much interest.

JUDITH WRIGHT

Nesting Notions

By Dorothy Makin

A PAIR of Lewin Honeyeaters (*Meliphaga lewini*) chose a nesting site in a straggling lantana plant beside a bush road on the northern end of Fraser Island, and when discovered by the writer the structure, which was some three and a half feet above ground, was little more than a framework of plant fibres, cup-shaped, and suspended from slender branches. The most interesting thing about the nest was the use by its owners of scraps of printed paper.

A bird was watched for some time and made quite a few visits to the nest. Three days later the writer took some interested people to see how the building was progressing. As so often happens, the birds had not gone on with the nest-building. In fact, an inspection of the nest proved that some material, including most of the paper, had been removed.

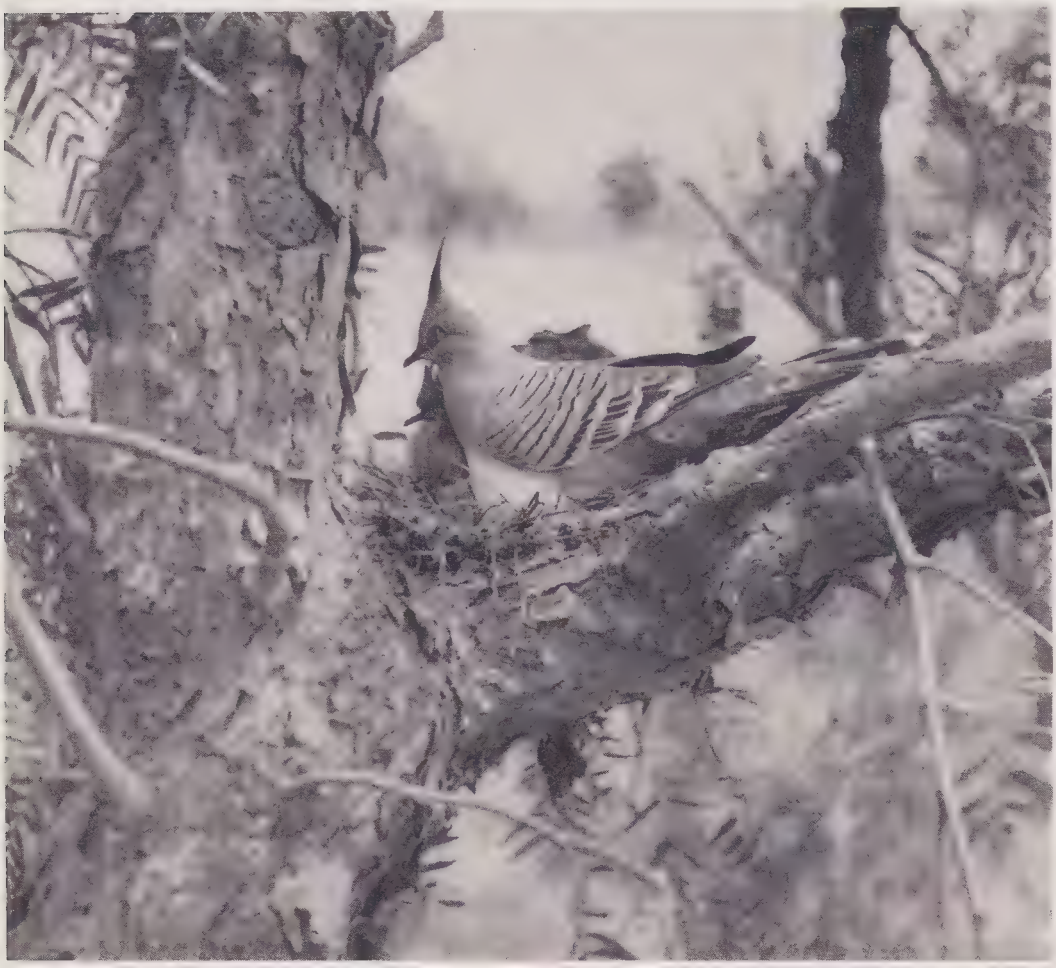
From a whitebeard bush close by, and on the opposite side of the road, a Lewin Honeyeater quietly regarded the party of humans. 'It's probably making another nest close by,' I said, and one of the party soon discovered a nest in the whitebeard, and in the bottom of the woven basket, incorporated in the structure, we could see scraps of paper. This new (?) nest, which was some ten feet or more from the ground, appeared to be complete, and the presence of the paper seems to point to ownership by the same pair of birds. However, on earlier visits to this spot the writer had seen a territorial squabble between two Lewin Honeyeaters, and the possibility of another pair owning the second nest cannot be overlooked. Another query is: can a pair of honeyeaters build a nest in three days? When the nest in the whitebeard is no longer needed by the birds, we hope to identify some of the scraps of paper. Meanwhile

Banded Finch at nest.

Noisy Miner on nest.

Magpie-lark (Peewee), Female, on nest.

Crested Pigeon on nest.



we must be content to wait, and to watch further developments.

This habit of adopting unusual nesting materials can lead birds into trouble, as in the case of a Noisy Miner (*Myzantha melanocephala*) which found a long thread of white cotton attached to a garden vine at Columboola (Q.) and tried to appropriate the thread for nest-building.

WHEN found, the bird was entangled in the cotton. Before being released the 'Micky' was marked, and was later proved by its actions to be something of a scatterbrain, frequently in bother; often starting and then abandoning nests. But don't get the impression from this that all Noisy Miners are lacking in common sense (or its avian equivalent), for birds are individuals, as some of my own observations have amply illustrated; and some examples of individual behaviour will be given later.

Another example of bother from nesting material was provided when a bird-lover discovered the distress of a nestling Noisy Miner which had swallowed (probably with food) the end of a piece of horse-hair which the parent birds had used when making the cradle. Unable to move the hair by gentle pulling, the man did the next best thing, and clipped the hair short to release the young bird from certain death, because one end of that hair was firmly woven into the nest.

Australia has a big number of different kinds of birds, between six and seven hundred species, so there is normally a great deal of variety in the way the birds build, and in the places they choose for nesting, materials selected, and so on. Apart from this, birds have individual 'ideas' on nest sites, and sometimes depart from the normal when choosing a spot for the nursery.

The well-known mud bowls of the Peewee (*Grallina cyanoleuca*) are sometimes adopted for use by quite different birds, which use the sturdy structure of the Peewee as a firm base, building another nest within.

In the case of a Willy Wagtail (*Rhipidura leucophrys*) the smaller nest of the 'Willy' was built in, and to one side of, the big mud nest. Many people still think that Willy Wagtail also builds with mud, but this is not the case. His neat little nest is made of plant fibres cleverly

held together with cobweb, and beautifully finished.

In a creek tree at Columboola, a Grey Thrush (*Colluricincla harmonica*) pair adopted the nest of a Peewee, and made a nest of twigs therein. The ends of twigs could be seen from below as the Thrush brooded.

Another bird the writer has seen using a Peewee's nest is the White-breasted Woodswallow (*Artamus leucorhynchus*) and another again is the Crested Pigeon (*Ocyphaps lophotes*).

White-browed Babbler.

THE question has been raised as to whether the Apostle-bird or Lousy Jack (*Struthidea cinerea*) uses abandoned nests of the Peewee. My husband was reared in the Miles (Q.) area where Apostle-birds are plentiful, and as a schoolboy watched the birds making the mud bowls in trees in the grounds of a country school. If a person climbed a tree to examine a nest, the whole party of Apostle-birds would attack. He discovered this early in his career as a bird-watcher. The writer has seen Apostle-birds carrying mud to a partly-built nest, but how many birds help with building is difficult to prove unless the birds are banded or feather-marked in some way. These birds are known to be communal nesters.

The Apostle-birds must not be confused with the Babblers (*Pomatostomus*), also sometimes known as Apostle-birds. The Grey-crowned Babblers frequented our garden at Columboola, fed at the bird-table, and used trees in the yard for nesting, as well as nesting in a brigalow clump close by. We found them most interesting and entertaining, not only in their nesting habits but in many other ways.

The Grey-crowned Babblers (*P. temporalis*) habitually use one of their large stick nests for camping, the whole party entering the nest at about sundown, and making a great deal of noise before settling down for the night. The birds have a favourite route to the nest. For years the skeleton of an old hay-shed was used by the garden Babblers. Every evening they played a sort of follow-the-leader game along the old ridge-pole, until the old building finally was removed.

THERE is much posturing and displaying before the birds finally retire into the large nest, which is an affair of sticks, built by the company of birds.

Not content with one nest, the Babblers build a number. They sometimes change from one to another as a camping nest.

Blue-faced Honeyeaters (*Entomyzon cyanotis*) adopt the nests of Babblers rather than build their own, and we discovered that the little Banded Finches (*Steganopleura bichenovii*) like to roost in a party, inside the nest of the Babbler.

To conclude these remarks on nesting habits of birds, let me describe an exciting experience with a Brown-headed Honeyeater (*Melithreptus brevirostris*) which wanted some hair for nest-lining, and helped itself from the horse I was riding. That fearless little bird settled on Lady's chestnut mane and tried to remove hair, but this proved more than the bird could manage. I removed my hat and it tried my hair. Then it clung to the pony's flank and removed tufts of the bright reddish coat, the effect being that of a bright ginger moustache as the hair protruded from the sides of the honeyeater's bill.

When it flew to the nest in the top of a sapling I followed and sat on the horse at the foot of the tree, and the bird returned again and again for more of the pony's loose coat.

That, too, happened years ago at Columboola, but these notes are being written at Sandy Cape, Fraser Island, which is proving another place rich in bird-life, and notes being gathered on nesting birds of Fraser Island may well form the basis of further articles.

Apostle Birds live in groups.

Crested Pigeon.

A Sege

By Kate Grieves

**'Sege' (not 'sedge' as our cover artist spells it) is the collective name for a group of herons according to the vocabulary of mediaeval hunting terms The heron was hunted with the hawk, more for the purpose of protecting the fish ponds than for eating. Its body has very little flesh.*

Egretta Alba
standing in the paperbarks.

Plumed Egrets
(E. intermedia)
courting on the nest.

# of Herons

** *The name 'egret' is properly applied to the white species of the Heron group. Hence the 'aigrettes', feather millinery ornaments popular some fifty years ago and taken from the birds in circumstances of great cruelty in the breeding season. They were the nuptial plumes.*

Nests of Egretta Alba in upper parts of Prickly-leafed Paperbarks.

WE noticed that the big white birds were appearing over a wider area in the swamps of our valley and realized that the breeding time for the egrets** was almost finished. We must hurry if we would see the last of the colony. In days of old we should have ridden out with hawks on our wrists to fly at the herons but on this autumn day, with binoculars, we drove to the swamp where, for many years now, the egrets have returned in hundreds each spring to repeat the cycle of courtship, nesting, and rearing young. We chose to go late in the day so that we would get an idea of their numbers as the birds congregated for the night at their nests.

This 'heronry,' unique for several reasons, lies in a swamp of the lower Clarence flood plain. A drainage scheme, planned for the quick removal of flood waters, is being laid out. How it will affect the permanent swamps and their population of bird and animal life is yet to be seen. The egrets are known for sure to have been established there in 1936 but how far back before that we cannot trace. Egrets do breed in other places in this state, and in other states, but, up to date, this is the only colony on record where the three long established species, *Egretta alba, E. intermedia,* and *E. garzetta,* nest together and have for company the recently arrived Cattle Egret, *Bubulcus ibis.* These names are all of recent adjustment. Here took place the first recorded banding of the Cattle Egret chick. For extra good measure, a lot of Little Pied and Little Black Cormorants live with these egrets.

People who have never seen the live egrets would still be able to recognize them because they are popular subjects in water scenes, especially in Oriental art. The Maori people, on the occasion of our Queen's first visit to New Zealand, addressed her as 'the beautiful white heron from afar,' a compliment of the highest order in their language. Standing serene and proud above the still shallows, they have an air of aloof dignity, giving no hint of the murderous efficiency of their dagger beaks or the deadly concentration of their hunting. *Egretta alba,* also called 'White Heron' and 'White Crane,' appears in many places throughout the world. It is a powerful flier. In the air it sails along majestically, long legs thrust straight back behind, long kinked neck set back comfortably in a looping fold between the shoulders, beak pointing directly ahead, a continuous line from bill-tip to toenail, thickened amidships by the bulk of the body. They have very little flesh. It is a shock to pick one up and feel its light fragility. The difference between them, apart from size, is not marked in a casual glance, the variation of beak and leg colour being apparent only to the keen observer.

However, in courting time in the spring their triumphant beauty is arresting. *Egretta alba* and *E. intermedia* grow mantle and bib respectively of lacy white

plumes, sensitive to every breeze. *Alba*'s beak changes from yellow to black and the cere round the eye becomes a lovely green. Both *alba* and *intermedia* develop a pink blush at the knee and thigh. *Garzetta,* the Little Egret, gets a chest ruff and grows three flexible narrow feathers about four inches long from the back of its head, like 'follow-me-lad' ribbons on a lassie's hat. Its beak and legs become polished black, the cere round the eye turning red. The colour changes in the courting birds have provoked much argument about their identification heretofore.

The Cattle Egret looks commonplace alongside the elegance of the taller birds. Usually pure white with yellow bill, it is a short-necked bird with stubby legs. At courting time it assumes a yellow, almost ochre coloured head covering and mantle of loose feathers, and its beak becomes very deep yellow.

ABOUT November we find the egrets beginning to frequent their old nesting site and courting commences with the appearance of the nuptial plumage. They build their nests almost exclusively on the prickly-leafed paperbarks which grow in several large clumps along the swamp. Why this tree is favoured above others close by we are unable to discover. The Little Cormorants in the colony, as often as not, use the casuarinas and eucalypts in and along the edge of the group of trees. The cormorants also line their nests with gum leaves. The egrets, all four kinds, follow a very austere design. Sticks, knobby and crooked, as large as the bird can manage, are flung together with an interlacing of smaller twigs. The chicks, all beak and legs and bare skin, tufted here and there with down, hatch from the three or four eggs laid therein. There, through the blazing summer, both parents, equally devoted in their cares, take turns in guarding and foraging. The hunting parent on his return is greeted with hissing and attack by the hungry chicks. The adult stands quiet for a while until the demands of his offspring stimulate his response. Then he lowers his head and, with his beak lying crosswise in the open beak of the chick, regurgitates a semi-digested mess of skink lizards, land and fresh water insects, and small animal life. The replete youngster sinks back and the next takes a turn if the parent has enough. The loudest clamour obtains first attention. The long neck of the old bird can be seen in a convulsive movement as the food travels up from the crop.

The young continue to use the nest till well grown and may be seen standing nearby or, in the case of those old enough or unlucky enough to have fallen out, poking about in the swamp below. On our late evening visit it caused us distress to watch the efforts of little ones to get back up the trees to their nests. It was hard to refrain from going to the assistance of those whose attempts to climb unsuitable supports were doomed to failure. Should they get up into the tree, they are hurried along by angry jabs from the beaks of those they pass, or driven back by vicious stabs from above. It is a world of fear and pain until they reach the shelter of the nest. We have never seen any adult show any concern for a chick fallen out. We could not help. An approach would set the colony aflutter and others would fall out.

In any case, we know from experience that the serene immaculate appearance of the birds belies the stinking, lousy condition of the home sites, especially at this late stage of the season, and the carpet of hyacinth below, apparently solid, covers a muddy stew, anything up to six feet deep. So we keep away and extend only our good wishes to the strugglers whose efforts will prove their ability and eligibility for survival. The predators which haunt the area keep the place free of the remains of the scores of young chicks which must perish there.

Egret colony. Prickly-leafed Paperbarks in a swamp at Gillett's Ridge (Ulmama).

APART from interest which everyone feels for creatures acting in such dramas of love, birth, and death, there is also the thrill of watching their beauty of feather and flight. The big *alba* is usually found at the top or outer edges of the paperbarks or casuarinas, where its long legs find easier take-off and landing. There the bird stands, snowy plumage gleaming silver in the sunlight or blowing in a lacy pattern against the blue sky. He takes off and lands with ungainly flappings and jerkings as the light branches of the paperbarks yield to the thrust. But once airborne, his flight is smooth and elegant. Occasional powerful sweeps of the wide wings and a cunning use of air currents carry him easily and gracefully on his wide search for food or journeys to distant lands. All species are known to be overseas travellers at times.

The smaller *E. intermedia* and *garzetta* are able to find comfortable lodging in the denser parts of the paperbarks and live cosily along with the Cattle Egrets and Cormorants in real apartment homes. We do not know whether a pair raises more than one brood in a season. It seems unlikely. By the time the first comers have got their chicks on the wing, late-comers have taken over and refurnished used nests. One year, wind smashed the nests over and over again and threw out the eggs. Feeding conditions were not good and in the end there was no breeding at all. The few that congregated gave up and dispersed.

The Cattle Egrets remain in the area all the year. Spreading in groups throughout the fields, and being dry land feeders among the cattle, they are not so dependent on the filling of the swamps.

Now, ragged plumage and faded colour of beak and thigh are common as the fervour of summer declines. The bigger birds go farther out as the young ones mature and become independent. As we go home along the swamp roads in the fading light, we pass a long, almost submerged fence. On each post and on the rails between sit 142 Cattle Egrets, pure white, probably young adults with spent parents. Their heads are all turned into an imperceptible breeze. The frieze of living birds is reversed in the water almost touching the rails — white images in a glass brushed and tinted with the pink and lilac reflections from the afterglow.

For Children

Personal Observations

Rufous Fantail — July, 1963

JOHN DWYER,
Rockmount,
Helidon,
Queensland.
Age: 14 years.

DURING recent months the Rufous Fantail has travelled north to the comparative warmth of our state of Queensland to escape the winter chill of the southern states, Victoria and New South Wales. Despite the fact that this bird breeds in the south, I have spent many fascinating moments watching the movements of different pairs of birds.

The first time, I think, I ever saw a Rufous Fantail was several years ago, when I was about eleven years old. My brother, my sister, and myself were fishing for yabbies in a creek running through our property. High in a giant tea-tree, which reared its head vainly towards the open from the scrub-rimmed gorge, I heard the call which, ever since, has sent my eyes roving in its direction. There, flitting about, was the unmistakable form of a Rufous Fantail. I watched it, its unbelievably beautiful fan-shaped tail bobbing and dancing in the dim light at the bottom of the gorge. The rufous tail fascinated me, as it has continued to do ever since, and I could not believe I was looking at the bird whose picture was shown in a bird book belonging to my mother, at which I had often gazed.

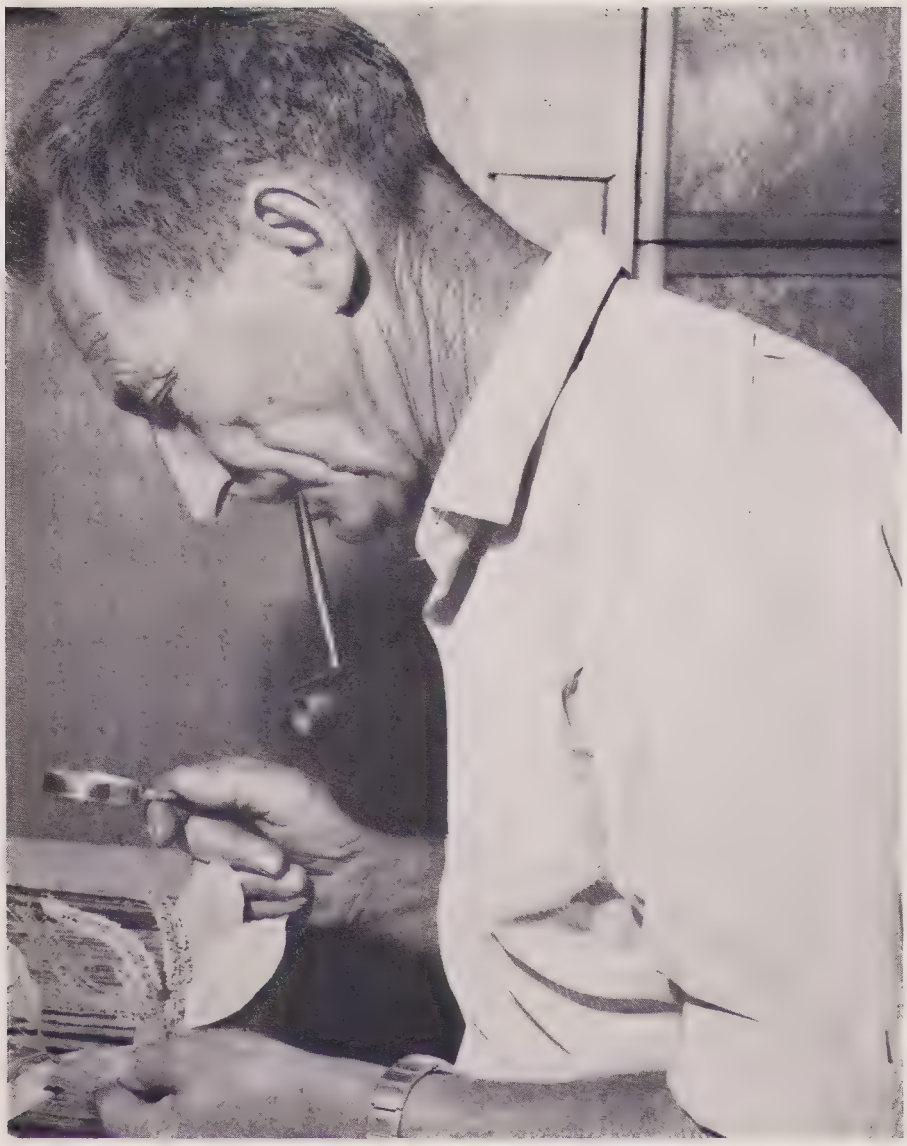
That winter I did not come across it again, and, not till next year did I really convince myself that the birds were members of our bird community. Then, during that season, when perhaps I was becoming more observant and bird-conscious, and the season of the following year, I often saw pairs, for they seem to remain in pairs during the non-breeding season, in the scrub and on the telephone line near the five-mile road to the state school which I attended.

UNTIL now I have not given much of a description of the bird itself or its habits, which I now must endeavour to do. As have other members of its family, this fantail has a long, quite remarkable tail, which it spreads in a wonderful fan, the tail being three inches long, the bird having an overall length of about six inches. The tail is a striking rufous colour, and the bird has a rufous band over its eye. The back is dark, but with a tint of rufous, while the front is an off white colour with a white throat separated by a dark band stretched from shoulder to shoulder.

Living in the warm scrubs, the Rufous Fantail finds numerous insects on the damp ground and in the undergrowth. With remarkable agility the bird darts hither and thither amongst the foliage after these insects, unerringly snapping them up with obvious relish.

This year I attend high school in Toowoomba, thus destroying many chances of studying this bird. Just the same, I never miss an opportunity of riding round the Rufous Fantail haunts when I spend a swiftly passing week-end at home.

A book prize for John.—Ed.



Introducing

BILL JONES

IN this issue is a fascinating article on Ant Plants, written by Bill Jones. Bill has agreed to be the judge of our Children's Competitions in *Wildlife* and also to do his level best to answer questions about natural history subjects sent in by junior correspondents. If you have a lizard or a bird or a plant, or anything you cannot identify, please write to Bill Jones, *Wildlife,* Box 1173 P, G.P.O., Brisbane, enclosing a photograph or a drawing and a full description. Please also send a stamped, addressed envelope for Bill's reply.

Each month the most interesting questions and Bill's answers will be published on this page and Bill's awards for our competition will be announced here. Bill will do his level best to identify anything that 'grows or crawls.'

Bill Jones has been an outdoor man all his life. He has lived throughout eastern Australia, from Victoria to New Guinea. He has been a timber cutter, a bullock driver and a professional fisherman. He has spent long periods in forestry plantations and nurseries.

All his life he has been a keen naturalist. He has a vast practical knowledge of natural history. At present he is employed with the C.S.I.R.O. Drug Plant Survey Section. His job of collecting specimens takes him all over the place, camping out in all weathers.

Bill has a hide like leather and mosquitoes and sandflies don't worry him in the least. This is a tremendous asset in one of the fields where Bill is an expert — coastal mangrove swamps.

Although Bill is completely self-taught, he rubs shoulders with distinguished scientists on equal terms. He recently led a team of leading world plant chemists around the forests of North Queensland.

As well as having a vast knowledge of natural history, Bill is a talented musician and his banjo always accompanies him when he goes bush, even in the inaccessible parts of Cape York Peninsula.

Bill is an expert photographer and a good writer. As well as the service he is giving us on this page we expect many more fascinating articles from him in the pages of *Wildlife*.

A word of caution — please don't send any live specimens to us or to him through the post.

BILL JONES ANSWERS YOU

Dear Sir,

A few weeks ago mummy was digging up clay when she found a hole about nine inches long and two inches across. So she dug the hole up and found something just like a lobster.

It was a brown-green colour, about five inches long with big pincers and long feelers.

Here is a drawing of it.

Then we put it back again.

A few days later we came back and it had dug a hole not far from its last one.

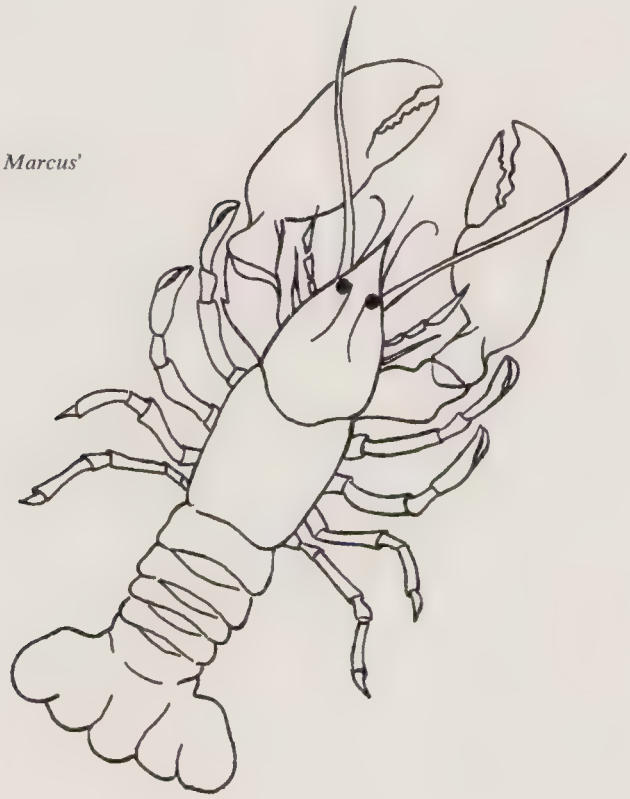
We live on Buderim, 500 feet high and three miles from the sea, and it is living in solid white clay. What is it, please?

MARCUS LANGDON.
Age 8.
The Pottery,
Buderim.

Dear Marcus,

The creature so nicely described and sketched in your letter is a Freshwater Crayfish. They are perhaps better known locally as "Lobbies". Their habit of digging holes like those described in your letter has made them very unpopular with people who have dams to conserve water. The Crayfish burrow holes in the banks of the dams allowing the water to escape. These colourful creatures live in fresh water streams and dams. It is not unusual to find them high up in the cool mountain streams at altitudes of 2,000 to 3,000 feet. Somtimes they may be seen some distance from water, crawling about slowly among the tree roots — probably in search of food.

BILL JONES.



This is Marcus' drawing.

PHOTOGRAPH CREDITS

Barry and Joanna Morgan, page 3;
Bruce Sember, pages 4, 5, 6, 7;
Jane Wilkinson, page 9;
P. A. Boorke, pages 13, 14, 15;
Roy Grieves, pages 16, 17, 18;
Bill Jones, pages 24, 25;
L. G. Chandler, pages 34, 35;
N. Chaffer, page 36;
National Publicity Studios, pages 37, 38, 39, 40.

Bats in Our House

By Pat McGrath

IT is a hackneyed expression, 'Bats in the Belfry.' We experience a modification of this as we have bats in the ceiling of our house. We are the interlopers, because by examination the little creatures 'upstairs' have been in residence for decades.

Just after settling in the house our attention was attracted by a peculiar squeaking in the kitchen ceiling. Periodically I tried to identify it. No bird emitted such a sound; rats were ruled out. For some months beetles were considered responsible. Various species of beetles can be quite noisy.

Crescendo was reached in March. The noise was so pronounced immediate action was necessary. To satisfy curiosity, on-the-spot investigation revealed all the evidence necessary for positive identification. *Vespertilionidae*.

To reach the bat roost called for a display of gymnastics. Up a rickety step ladder, squeezing through a miniature manhole into a ceiling where nearly half a century of sooty dust, black as a coal face, lay like a thick carpet. Moving in a confined space is ordinarily difficult, but balancing on four by two joists in a three foot pyramidal cavity was hard work.

The effort was well worth while. I came face to face with the ugliest little character you could imagine. Lying on the narrow edge of the joist with the strong light shining toward the opening in the wall plate, I was fascinated as this tiny creature climbed out to see who was intruding.

Its movements were jerky. The squeaking emitted was highly pitched; eyes were like black beads. In fact, the animal had the appearance of an aerodynamic mouse. Mouse-sized and mouse-coloured, the tiny body was edged with a pair of membraneous winged arms, both thumbs were single claws. The legs were very short, featuring five toes of equal length. Its tail was of good length bisecting an interfemoral membrane. Manoeuvrability was sure by means of thumb claws, wings, feet and tail.

I found a skeleton and was able to identify the creatures as simple-nosed bats: *Vespertilionidae*. The members of this family are easily identified by the plain structure of the lips and muzzle. The nostrils are situated at the extremity of the snout and a complex nose-leaf is absent. The inside of the mouth is a strong, flesh-pink colour. The teeth are even, but short, about one-thirty-second of an inch in length. It would be impossible for this bat to harm humans by biting. Another important feature is the tail, which projects just slightly beyond the edge of the membrane.

THE small creatures are insectivorous and because of their size form the sub-order of *Microchiroptera*. The face is short and broad, ears rather opened but not relatively large, the eyes small and beady, like mice.

Echo-sounding or ranging is a new amazing discovery to men of science. This fantastic ability is used to guide atomic submarines under ice floes, jet planes to land and take off in heavy weather and during hours of darkness. It enables oceanographers to map the contours of the bottom of the seas. Fishermen find great shoals of fish by this ingenious device. Radar and sonar send out high-frequency sound waves and by measuring the time the echoes take to return, distance, contour and objects are measured with precise accuracy.

Long before modern man developed this wonderful invention, animals were using it as a part of their natural equipment.

Bats are now undergoing intense research and experimentation, because they have an echo-ranging competency that makes scientific apparatus seem crude and primitive.

The magazine *Scientific American* states: 'In these days of technological triumphs it is well to remind ourselves from time to time that living mechanisms are often incomparably more efficient than their artificial imitations. There is no better illustration of this rule than the sonar system of bats. Ounce for ounce and watt for watt, it is billions of times more efficient and more sensitive than the radars and sonars contrived by man. Bats have achieved their signal-to-noise discrimination with an auditory system that weighs only a portion of a gram, while we rely on computing machines which seem grossly cumbersome by comparison.'

Bats can fly in a dark room, strung with fine wires, without as much as touching one. They can locate, by their inbuilt sounding system, and catch with uncanny skill small insects flying in the dark.

This marvellous feat was accomplished under the most adverse conditions during research. To test the bat's echo-sounding, background noise, set at the same frequency and pitch, was amplified two thousand times greater than their sonic and supersonic squeak. Despite this effort to baulk the 'guinea pigs,' they were never thwarted. This ability has scientists mystified. They would very much like to learn this secret, but have no idea how to even begin duplicating it.

NATIONAL *Geographic Magazine* observes: 'Big ears detect the returning echoes, and a brain weighing a few hundredths of an ounce computes the data and controls the hunter's speed and direction. He can hear an echo from

as small as a mosquito, recognize it in a split second, swoop to the attack — a feat of nature that man, with all his electronic skill, must still hold in awe.'

Bats employ more than their big ears in their echo-sounding prowess. Their nose, mouth, unique vocal organs, with a massive larynx of bone, play important parts, and their eyes to a minor degree. Eyes are only used at prey-contact point.

It is not fully understood just how these tiny animals produce both audible and supersonic voice. It is known to scientists and students of Chiroptera that bats are able to avoid the distractions of their own original signal by instant contraction of the auditory muscles during vocal projection, so that only the echo is heard. The question remains, is the transmitted sound cast outward by mouth, nose or a combination of both?

By means of their sounding system bats are able to differentiate between moving and stationary objects, and also immediately to determine the size and nature of the sonic obstruction. In that way they never attack the wrong prey, such as spiders or insects too large to eat on the wing.

A subordinate appendancy used in food capture by these small mammals is the interfemoral membrane. When the radar beams a quarry the bat brings its tail down and forward, forming a sizable 'basket' to scoop up the prey. As soon as the object hits the trap the bat seizes it in its mouth and eats it on the wing.

Bat radar frequency is so strong and powerful that objects are located or scanned as far away as twelve feet.

These creatures are winged animals and can out-fly birds as far as aerobatics are concerned. They display the optimum in manoeuvrability, so that it is impossible for night-flying insects to evade capture.

Their wings are actually arms and hands. The major part of bats' wings are the elongated phalanged hands, being as long as the rest of the arm. The skeletal frame is covered by a membraneous skin capable of great flexibility. The bone and muscle formations in the wings are perfectly designed for sustained flight.

BATS are not blind as some people believe, even though their eyesight is weak. They hunt their food during the hours of night, particularly from early dusk till mid-evening, and again just around daybreak.

The genesis and history of bats is interesting. Ever since Leonardo da Vinci (1452-1519) instituted palaeontology, scientists have failed to locate any missing links to transports bats back to a prehistoric ancestor. Bats have always been bats. In the upper Eocene rock formations, fossil remains of Chiroptera have been found identical with present-day kinds. By cross-breeding, as many as two thousand species have developed with no trace of evolutionary change. The mainland of Australia, and Tasmania, have a bat representation of some fifty species. In size, there is a great difference, from the tiny 'flying mouse' to the giant fruit bat of the Malay Peninsula and South Sea Islands, whose wing span reaches almost five feet. Bats live in our house; they mind their own business; we will leave them at that.

Tube-nosed Bat.

Smooth or Spineless Ant Plant (Hydrophytum farmicorum).

The Curious

By W. T. Jones

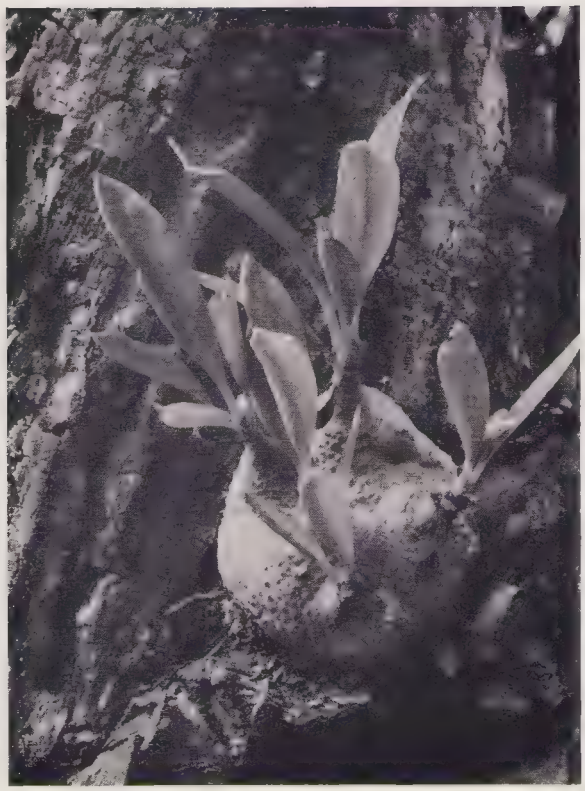
THERE are two main types of Ant plants in tropical Queensland — Hydnophytum and Myrmecodia. Both types are a common sight in coastal tea-tree forests and along the margins of mangrove forests in the tropics. Often numerous Ant Plants, of different sizes and shapes, from one inch diameter to large, pendulous specimens weighing several pounds, may be seen growing on the same tree. These curious plants have adapted to live in a hot, dry, tropical climate — surviving long periods with little or no rain water. Being true epiphytes the Ant Plants are able to exist on normal rainfall and whatever food and moisture they can obtain from the outer dead bark of the host tree. The large, succulent, tuber-like stems, many of which attain a weight of ten pounds or more, apparently store up sufficient nutrients during the wet periods to carry the plants through the dry months of the year.

The smooth Ant Plant (*Hydnophytum formicarum*) has a large, irregular shaped spineless tuber-like stem with smooth, brittle branches. The foliage resembles that of the common 'Mistletoe' for which it could quite easily be mistaken.

The Spiny Ant Plant (*Myrmecodia antoinii*) has a squat tuber, liberally clothed with sharp spines, although an occasional plant is found with few spines or even spineless, and almost smooth. The branches, usually from one to three, springing from the apex of the tuber-like stem, are four-angled, each side having a row of smooth overlapping shields, in the centre of which are the scars of old fallen leaves. The shield margins are furnished with dense, sharp spines a quarter to three-eighths of an inch long. The angular branches often attain a length of two feet and, as they lengthen, assume a pendulous habit, giving the mature plants quite a different appearance from the pin-cushion-like shape of

Spiny Ant Plant (Myrecodia antoinii). The small round leaved vine at the top of the picture is Dischidea mummulaira and is often found growing with the Spiny Ant Plant.

Ant Plants



Smooth Ant Plant.

the young ones. Several long-stalked, broad leaves, five to six inches long are crowded at the end of each branch. The plants are attached to the host by means of a tough, fibrous root system firmly embedded in the outer dead bark of the host tree.

THE tuber-like stem when cut transversely exposes a pale, spongy tissue interlaced with a system of brown coloured passages or galleries resembling a maze. Small openings in the bark of the tuber allow the tiny ants to move to and from the galleries. The galleries do not follow any particular pattern and range in size from one-eighth to half an inch across. When a plant is disturbed tiny brown ants pour out — aggressively swarming over the intruder. The ants do not sting, but for their size give quite a nip.

Looking at a cross section of a tuber with its intricate maze of passages and chambers, so admirably suited to the needs of an ant colony, one is tempted to believe that the ants may have some influence on the design. However, the galleries are apparent in very small tubers, less than one inch diameter — suggesting that they are formed naturally by the plant itself. The ants appear to move in when the tubers are large enough to house a small colony.

It has been suggested that the galleries evolved as a means of aeration. Whatever the real purpose may be, the ants make good use of them in their aerial weather-proof homes. Very little seems to be known as to whether the ants give anything in return for the free housing. On the surface it would seem the ants benefit most from the association. Perhaps, as in the case with other Myrmecophytes, the ants render a service by protecting their host from insect attack.

Cross section of a Spiny Ant Plant showing labyrinthine passageway.

The Changing Face of the Countryside

The C. T. White Memorial Lecture for 1959

from the Queensland Naturalist

By Romeo Lahey

FIRST I would like to add my contribution to the universal esteem in which C. T. White is held. His fame as a botanist is world-wide, but I had the good fortune to have facets of his character revealed to me which are not so well known. His connection with the National Parks Association dates from the very beginning of things, and his help and advice as a member of the Council was invaluable through the years. One of my most rewarding experiences was a camp-out trip with him through what is now Lamington National Park. Everything was made subservient to his fundamental purpose of observing and collecting, and the physical effort so willingly put into carrying his enormous bundle of specimens through that trackless wilderness was an inspiration.

I should have anticipated his outstanding qualities as I had previously had an interview with his famous maternal grandfather, F. Manson Bailey, who, instead of praising me for the great trouble I had taken in securing a photo of the then unknown Queensland waratah (*Oreocallis pinnata*) had upbraided me severely for not bringing him the actual flowers, seeds, bark, and wood! But then, finding out who I was, he told me the exact number of fence rails which two of my father's brothers had split out of an enormous Flooded Gum (*Eucalyptus grandis*) at Pimpama forty years before.

This brings me to the subject of my talk, the changing face of the countryside, for outside the National Parks you will never see trees like that again. But as yet we are far from reaching the stage they have reached in Europe where now it is quite impossible to reconstruct the original appearance of the countryside.

Left to itself the change in vegetation due to evolution is very slow. There is a very good illustration of this at the foot of the cliff on the western side of 'Binna Burra.' There at the bottom of the tuff which underlies what must have been about 2000 feet of successive flows of lava are revealed the carbonized trees overwhelmed by the eruption. Samples of these which I sent to the C.S.I.R.O. were identified as three of the trees which are still growing there. Among them were Bolly Gum (*Litsea reticulata*), and Forest She-oak (*Casuarina torulosa*).

With the arrival of the first white settlers in this country change was inevitable. They found with the aboriginal inhabitants a completely different way of life and land usage. As Major Mitchell put it a century ago they found 'a people who had come to terms with their environment.' Their life depended on hunting, so, through the ages, largely by the agency of fire, they had moulded the vegetation of the country to serve their methods of hunting. But even so, they had changed the vegetation pattern less than the sheep has done in one century. So the population of the country had reached a maximum which was fixed by the abundance of game and was static. The white man's economy was an expanding one which depended on a different pattern of vegetation, so the pattern began to change as soon as the settler arrived in any area.

First, trees were destroyed to make room for buildings, others for building materials, then others to make way for the cultivated crops and fruit trees of other lands. Then as the herds of introduced animals increased other trees had to be destroyed to increase the quantity of grass feed. Soon it was found that the soil of the rainforest areas was richer than that of the eucalypt type, and that meant the doom of the rainforest. (As this clearing was an arduous process it soon bred an intense hostility to trees as they seemed to be the enemy standing between man and his daily bread. This hostility, although the cause has largely passed, has survived to the present day, and is now a menace to the culture of the community.)

And with the trees have gone the birds and animals that inhabited them; only birds and animals which could adapt themselves to civilisation, such as the magpie, kookaburra, willie-wagtail, possum, etc., were able to survive.

As no usable native grasses had grown in the rainforest this cleared land was planted with crops and grasses introduced from other lands. More recently still certain grasses and herbage from abroad have proved more valuable for stock feed so have taken the place of many native grasses, and in many places the earlier introduced grasses have been outgrown by later introductions.

So, although by human-life scale the process has been slow, the face of the countryside has been changed

considerably in only 150 years, merely by a change in the way of life of its inhabitants. The most dramatic change has been caused by the urbanization of large areas of the country due to the replacing of a nomadic system by an industrial system whose fundamental is fixity of location.

But there have been many other changes which I shall treat separately although they are all inter-related.

One of the most important because it was not influenced from outside is the change from what used to be the common pattern of park-like open forest country consisting mainly of grass with an occasional large tree. This was the product of the aboriginals' habit of annually burning the grass as part of their hunting technique. This had the effect of killing almost all the previous year's seedlings. But as the grazing industry developed, a stage was reached when overgrazing prevented the annual burnoff, with the result that more seedlings survived. So it was only a matter of time until the present stage was reached where what was previously good grazing country carrying large herds has become a dense mass of trees and bushes which in bush terms 'would not carry a bandicoot to a square mile.' A good example of this is the country between Logan Village and Tamborine. In the early days a traveller along the Camp Cable road could see right down to the Albert River, while now he can only see about twenty feet.

THE most spectacular change has been caused by the clearing of the rainforest areas. As the rainforest only developed on the richer soils which had therefore priority for farming, the presence of odd seedling survivors, mostly hoop pine (*Araucaria cunninghamii*) and crow's ash (*Flindersia australis*) is now (apart from historical records) the only evidence of the previous existence of what was once by far the most striking of our indigenous vegetation types. Such areas can still be identified at Kenmore, Pine River, Veresdale, etc., and on a wider scale at Beechmont, Maleny, etc. Beechmont was an example of the pinnacle of development of the rainforest type; the trees reached their maximum in height and girth of their kind. My father had a rosewood (*Dysoxylum fraseranum*) table consisting of one board four feet wide from this area. The yellow wood (*Flindersia xanthoxyla*) trees were so big that the scrub-fallers used springboards to cut them twelve or more feet above the ground because they were too big at the base, and they were the tallest, straightest trees I have ever seen in Queensland. And with the rainforest went the rainforest wild life. Where now will you hear that friendly music of the bush so loved by the pioneers, the notes of the Wampoo and Wonga pigeons, the Coach-whip bird and the Lyrebird? Only in the National Parks.

Another striking change has been the artificially created forest plantations. Apart from the fact that many of the species are exotic the geometric spacing of the trees labels them as change in the grand manner. They are not here only as an institutional change for, as the seeds of the exotic pines (*Pinus spp.*) are windborne, they are already invading the native landscape. A good example of this for all to see is at Coombabah, a few miles on the Brisbane side of Southport. In this case it may prove to be a good thing economically, but untold damage has already been done by introduced weeds such as Crofton weed (*Eupatorium adenophorum*), wild tobacco (*Solanum auriculatum*), groundsel-bush (*Baccharis halimifolia*), etc., which have completely

changed large areas not only in appearance but in use. Another example of invasion by exotics is the forests of camphor laurel (*Cinnamomum camphora*) established by birds along Bulimba Creek and near Rochedale. The most remarkable example of this, however, is prickly pear (*Opuntia spp.*) which not only took possession of huge areas but in its turn was almost completely eradicated by Cactoblastis insect (*Cactoblastis cactorum*).

It is almost impossible now to visualize the huge area overrun in such a comparatively short time by this introduced pest and the completeness of its dominance. A relative of mine revisiting after its release a cattle station he had literally been pushed off by the prickly pear was astounded to find fences he had not known the existence of, and which had been erected before the invasion.

A parallel case in the animal kingdom has been the spread and, in its turn, the destruction of the rabbit in much the same area.

These are classic examples of man's stupidity being neutralized by his scientific knowledge, but they give one an uneasy feeling that the result may not always be so happy. The insect imported to destroy the pest there have been birds such as the Indian dove (*Strepto-* Crofton weed has fallen far short of expectation. True *pelia chinensis*) and the sparrow (*Passer domesticus*) introduced without much harm to the country, but the recent introduction of the ferret to destroy the rabbit is surely flying in the face of Providence after our experience with the fox. And surely the example of Fiji, where the introduction of the mongoose to destroy the rats in the cane fields, resulted in the doom of all the ground-nesting birds in the island, should have prevented such folly.

For boating people, a remarkable change has occurred along the banks of the Brisbane River. In my sailing youth the number of mangrove trees above Parker Island could almost be counted on one's fingers. Now practically the whole tidal length of the river is lined with them. This is curious, as the seeding has been done counter to the current.

Another cause of change is the fact that over-grazing destroys certain plants. In the dry interior, saltbush is a classic example. In the coastal area, blue grass (*Dichanthium sericeum*) was once the mainstay of the grazing industry, but now is only found in protected areas such as the railway enclosure. Years ago buttercups (*Ranunculus spp.*) turned the black soil flats into fields of gold; nowadays even single ones are rare.

A different sort of change is taking place in the movement of bird populations. A local example is the Topknot pigeon (*Lopholaimus antarcticus*) which originally was not found east of the foot of the Great Dividing Range, but owing to changes in the food situation is now found freely in the south coast valleys right up to the rainforests of Lamington National Park.

However, the progress of change can be arrested, and even reversed. In the rainforest sections of the National Parks, on account of the denseness of the shade, the germination of the seeds of exotics is prevented, so that the only places where weeds can grow are creek beds and other open spaces. This is one of the main objecttions to roads in a National Park. In clearings adjacent to rainforests weeds establish themselves unless prevented, and under their protection the more vigorous trees reassert themselves, and finally, left to itself, the rainforest will completely re-establish itself.

I know of three cases of this in the Canungra district, two of which can be seen today. About the end of last century Laheys Ltd., in order to fulfil the literal conditions of improvement on a selection on Cainboble Creek, felled all but the hoop pine trees on about ten acres. This area is now included in Lamington National Park and as far as I know, although hundreds of people pass through it annually, no one else knows that it was once cleared, the only evidence being the old lignum vitae (*Vitex lignum-vitae*) and crow's ash stumps with their telltale axe marks, and these so harmonize with their surroundings that they are difficult to detect.

In another case on the track from 'Binna Burra' to the Border a lightning stroke twenty-five years ago killed every tree and bush in a circle about a hundred feet across. Today, although the track passes through it, it is impossible to detect the spot.

Everywhere, too, the rainforest, freed of the menace of fire, pushes its edge out fairly rapidly.

This gives hope that in time some of the errors of the past may yet be undone.

But there are many other changes that have been brought about entirely by human agency.

One is the creation of artificial streams by bringing subterranean water to the surface. This has had the curious result of adding bulrush (*Typha spp.*) scrubs to the bore drains.

The least creditable is soil erosion, where large areas of formerly productive land have been reduced almost to sterility by the ignorance and greed of man. This is a subject of tremendous national importance, and not one for a homily from me.

Another, a source of great local change, is caused by the construction of large artificial lakes for water supply and irrigation. These not only considerably affect the scenery but also the wild life of the surroundings.

One that is universal is the construction of roads and railways. These not only affect the lives of all the community, but their construction involves the appearance and use of the adjoining land. Modern methods of rebuilding by machinery cause the removal of large areas of surface soil which creates a strip of scenic and economic desert. Lesser manifestations of the same sort of thing are quarries, such as at One Tree Hill, mullock heaps as at Charters Towers, and open cuts such as at Mt. Morgan. This combination of road, railway, and industry is leading slowly to the nightmare of the future so well envisaged in one of the photos of the 'Family of Man' exhibition.

From the point of view of aesthetics the greatest menace is the electric transmission system. This dreadful criss-cross of poles and wires would ruin any picture of a street scene, and its high-voltage transmission lines murder the countryside with its dominating steel towers and bands of country barren of trees. To a certain extent this is being overcome in cities and towns by underground cables, but increased expense sets a limit to this, and for high voltage it is, for the time being at any rate, ruled out. Unfortunately, also, the transmission of power by wireless, although feasible on a small scale, is at the present state of our scientific knowledge quite out of the question.

It looks as if the future will have to accustom itself to these monstrosities as our forefathers have had to do with our skyscrapers.

Gwen Atkinson's Diary

SEVERAL inches of rain fell at Goondiwindi at the end of March and the creek came down in flood, giving plenty of food and water for the animals and birds during the winter months. However, since then there has been little rain and a very dry spring has been experienced. A drive through the paddocks yesterday (27 October) showed the creeks and waterholes mostly dry and many of the dams becoming merely mud holes. If rain does not fall soon the stock and wild creatures alike will be dependent on the bores for their water. How many of the birds and animals must have perished in dry times before graziers made this underground water available to them!

30th March: A loud and persistent 'queet, queet, queet' led us to the creek where a party of about six Blue Faced Honeyeaters were feeding. There were two young ones almost as big as the others, but asking loudly for food, while the rest of the party searched industriously under the bark and among the creeper for insects. Wings and tails outspread, they fluttered against the trunks of the trees, pecking behind the loose bark and looking very handsome with their metallic green backs, black heads and white fronts. Some, not all, had the bright blue feathers around the eye. Another day I saw one of these honeyeaters on the rainwater tank outside the kitchen. It walked round and round the top of the tank bending over to peck at the insects caught in the spider webs under the rim of the tank.

20th April: On a trip to Warwick, mostly by a bush track, many birds were seen, including two Black Cockatoos. Where the country was cultivated there were big flocks of Quarrions (Cockatiels), Crested Pigeons, Galahs, Pale-headed Rosellas, and many others. Flocks of Ibis of both types were seen.

21st April: The wattle was out in flower as we drove through the state forest area to Western Creek. This is poor grazing country and grows mostly pine and bulloak with a few broad-leafed ironbark trees. We saw no kangaroos and very few birds here.

At the end of April the wilga trees were out in flower. Some of the brigalow trees were flowering too and a couple of white-wood trees which grow on a stony hill were covered in blossom.

19th May: A loud commotion by a group of Happy Families (Twelve Apostles) led to the discovery of a death adder. The Happy Families were actually on top of it and were worrying it. Some of our neighbours, when ploughing recently, dug up several death adders from under the ground. One was so thick that it was thought at first to be a carpet snake — however, it was only three feet long, but very hideous.

7th June: About twenty miles from Goondiwindi and only a few hundred yards from the bitumen road we saw three Brolgas feeding in an old crop paddock. We stopped to watch them step gracefully about as they pecked at the fallen grain. It was the first time I had seen these big grey birds, but people living closer to Goondiwindi say that flocks of as many as thirty have been seen about there from time to time.

22nd June: In a thick patch of wilga scrub we saw a Grey Butcher Bird trying to lift a Micky Bird (Noisy Miner) almost as big as itself from the ground. It dropped it and flew off as the Land Rover approached. We found the Micky Bird was not long dead, and wondered whether the Butcher Bird had killed such a large bird itself or whether it had been found dead. Although we waited nearby for some time the Butcher Bird did not come back for its victim, although it was not far away.

23rd June: On a large dam on a neighbouring property we saw a pair of Black Swans with a family of three fluffy grey cygnets. They swam up and down the dam, one big swan leading, the other bringing up the rear and the babies safely in between. When we last passed this dam a week ago the swans were still there, the little ones now indistinguishable from the parents, at a distance anyway. Also seen on this dam were Dusky Moorhens with their red faces, a number of Coots with white faces, Pied Cormorants, Black Cormorants, Divers and a Darter (Snake Bird).

30th June: Visiting friends near Inglewood, the conversation turned to native birds and animals, as it so often does in the country. One man told of having seen two 'old man' kangaroos having a boxing match a few days previously. They fought most savagely and for a long time while he stood and watched. Someone else reported

An Owlet Nightjar.

having seen Yellow Tailed Black Cockatoos in that region recently. There was also a discussion as to whether Butcher Birds frighten the little birds away from wherever they frequent. Some maintained that the little birds all disappear within a few days of the arrival of a Butcher Bird. However, I have not found this so. There is always a number of Butcher Birds about the garden here (the grey ones seem to be more numerous in the winter and the pied ones in the summer), and yet numbers of little birds seem to come and go unperturbed. Small birds which are frequently seen in the garden include Jacky Winters, Willy Wagtails, Restless Flycatchers, Peewees, Banded Finches, Yellow-tailed Thornbills, Peaceful Doves, Blue Wrens, Silver Eyes, Grey Fantails, little Honeyeaters and occasionally Spotted-sided Finches (Diamond Firetails).

13th July: We stayed with friends near Gore. We awoke in the morning to such a loud noise of chattering and screeching of birds that we thought they must have a huge aviary. However, the birds were some distance away in a strip of yellow jacket box trees which were out in blossom. Standing underneath the trees the noise was quite overwhelming — the birds were there in millions. There were all sorts and the most beautiful bright colours. The majority seemed to be lorikeets and parrots of different sorts and among them we recognized the Scaly-breasted Lorikeet, Little Lorikeet and Eastern Rosella, but there were many others too and all such brilliant beautiful colours. There was constant movement as they darted about with their high pitched screeching and chattering. Among all this gaudy brilliance, aloof and unruffled, sat a Tawny Frogmouth, looking so much like the branch on which he was sitting that it was almost impossible to see him. These must surely be the most ridiculous looking birds in all bird land! This was the coldest weekend of the winter, sleet and snow being not far off, and it seemed strange to see these bright tropical-looking birds on such a day.

23rd July: The wild clematis was all out in flower and the creamy coloured blossoms formed a mantle over acres of low bushes on a rocky hill. This is the haunt of Blue Wrens and glimpses of the beautiful little blue birds standing on the cream flowers were well worth the trip out there. The needle trees were also in flower.

8th September: Three Eastern Swamp Hens were seen at Number Two Bore. These have been at the bore for some time, but are rarely seen. However, a good view was obtained this time, as the birds were walking across the paddock towards the reeds surrounding the tank, and their long legs and the red on their heads was plainly seen. Baby ducks were about at this time too, and in one place about a hundred yards from a creek the children rode on to a pair of ducks with two chicks about three inches high. A Water Rat was also seen at one of the bores.

27th September: A pair of Peewees continually flying back and forth led to the discovery of their mud nest high in a box tree near the house. There were three babies who demanded constant attention. By the 7th October they were beginning to leave the nest and a few days later were following their parents about the lawn loudly demanding to be waited on. One baby clung to the parents much longer than the others and followed them about squawking continuously although quite able to peck for himself — clearly destined to be either a dictator or a delinquent in peewee society.

30th September: Two Spiny-cheeked Honeyeaters appeared in the garden and set to work to eat the aphis off the roses. They continued busily at this for some days and seemed to reduce the aphis quite considerably. Two Noisy Friar Birds also appeared in the garden about this time. These curious looking birds were described by Surgeon White, who came to Australia with the first fleet. In his journal he calls them 'Knob-fronted Bee-eaters' and thought the 'short blunt knob' at the base of the beak 'most remarkable,' which indeed it is. These Friar Birds and the Honeyeaters have now joined the varied crowd which is eating the ripe mulberries on a large tree in the vegetable garden. Among these visitors are Spotted Bower Birds (dozens of them), Olive-backed Orioles, Silver Eyes, Black-faced Cuckoo Shrikes, Little Cuckoo Shrikes, Micky Birds, Crimson Wing Lories and others.

12th October: On a long drive through the paddocks, we saw numbers of kangaroos and emus — at one bore there are always several emus drinking at the trough with the cattle — (an American staying with us recently was most surprised to see emus; he thought they were

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'just something you read about in books!') Passing a patch of low scrub, salt bush and prickly bushes we saw a flash of colour and, on stopping, found a Blue-and-White Wren. It was really the most beautiful little bird I have ever seen, the most vivid dark blue with pure white wings and a long tail. The little brown female was there too. Neville Cayley says the Blue-and-White Wren is found in the interior of Central Queensland, and I wonder if it is often found as far east as this (about fifty miles north-east of Goondiwindi). I would be very interested to hear if any readers have seen it near here. A fortnight later we went back, hoping for another look at this lovely bird, but did not see it, although we saw many of the ordinary Blue Wrens and other small birds, including Red-browed Finches, which I had not seen before.

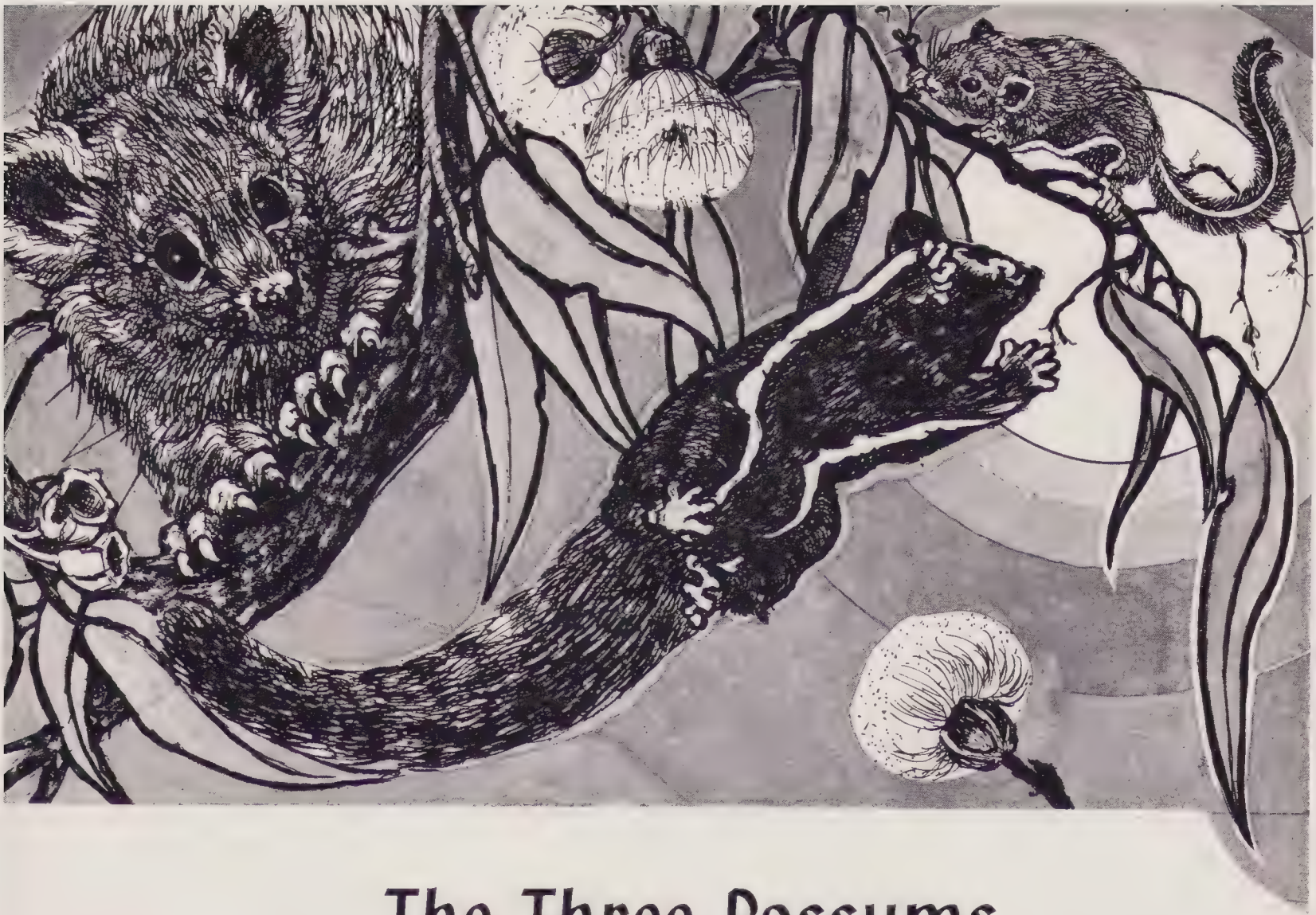
13th October: The first swifts of the season were seen. These were Spine-tailed Swifts and appeared about 4 o'clock in the afternoon, diving and swooping fairly low down. We were at a tennis party at the time, and everyone hailed the swifts as a hopeful sign of rain, but although it was showery next day we did not have enough rain to measure.

17th October: Several Kingfishers have been seen lately and the beautiful Rainbow Birds are also about and have been seen frequently. At one place near the creek we saw up to a dozen flying about and resting on branches, their beautiful golden heads glimmering in the sunshine and the bronzy colour on the wings showing as they flew overhead. One I saw had a large moth in its beak and proceeded to beat it on a branch before eating it. These springtime visitors with the curious long tail feathers and brilliant colours are thrilling to watch.

20th October: We saw a Tawny Frogmouth sitting on a large mud nest in a brigalow tree. The nest must have been made by a Happy Family bird, and we thought at first that Tawny must have just happened to sit down on it, but he was still there when we passed again a week later. It was nearly dark this time, and he was looking more wakeful — we threw a stick in his direction, whereupon he flew into the next tree, froze immediately into the likeness of a branch and just sat there, although several Magpies and Micky Birds flew at him and scolded him. We left him sitting there, but will be interested to see the next move of this strange bird.

The wild orchids are flowering now, the small green flowers spotted with reddish-brown having a faint sweet scent.

Wandering Albatross in flight.



The Three Possums

By Elsa Parnell

BEFORE time had begun to be reckoned accurately, and when furry animals had been on earth only a few million years, there lived three possums — a very small possum, no bigger than a mouse; a medium sized possum about as big as a rat; and a large possum, the size of a full-grown cat.

They lived together in a Peppermint Gum, in a Eucalypt forest, on a mountain-side in Australia. The Peppermint Gum was old and hollowed and its branches were full of nooks and crannies.

The small possum slept all day in a tiny grass-lined nest, in a crack at the base of one of the branches, and at night he came out and supped the nectar of gum blossoms and sometimes ate soft-bodied moths and insects that visited the flowers, and he would occasionally speak in a small, sighing voice, as soft as himself.

The medium sized possum was snug throughout the sunlit hours in a round leafy nest in a hollow, where the main trunk of the tree branched into two limbs, and at night he came out and ate whole gum blossoms and any insects he could find, even the hard-shelled ones. He usually uttered a medium sized hiss, but when he was excited or annoyed he chattered like a monkey.

The large possum spent the daylight hours asleep in the hollow main trunk of the tree, which he had lined with twigs and bark for comfort. When the sun set he came forth and ate not only gum blossoms but also the tender leafy shoots of the tree. He was not partial to insects. He found them hard to catch. He sometimes chattered or grunted when he was angry, but when he was pleased he sang in a shrill, high voice, almost like a bird.

The three possums lived cosily there in the tree for many, many moons. Nothing disturbed their sleep by day or spoiled their gay frolics by night, until one fateful afternoon.

There they were, all dreaming blissfully in their warm, dark nests, when the large possum near the base of the tree heard a faint 'scritch! scratch!' on the trunk just outside his home. At first he took no notice and merely curled his tail a little more tightly around himself. But the noise continued — 'scritch! scratch! scritch! scratch' — the sinister sound of claws climbing the tree! Presently the medium sized possum heard it too, and even the very small possum half-awoke from his slumber and listened with one alarmed ear.

Then suddenly the large possum was wide awake with fear, the medium sized possum sat up in his nest rubbing

his eyes worriedly, and the very small possum uncurled himself, reluctantly. The large possum shot out of the hollow and raced up the tree to the highest branches; the medium sized possum followed with all speed; and the very small possum streaked up after them. Sighing, chattering and grunting in the glaring light that hurt their eyes, they all three looked down and saw what they had feared. A giant goanna was clawing his way upwards. A mighty lizard he was, with flat, cold eyes and tongue flicking restlessly between dark jaws, such as could swallow a small possum for an appetiser, a medium sized possum for entree and a large possum for main course.

The three possums cowered together at the end of the branch and the goanna crawled relentlessly towards them. They looked around hopefully for a nearby tree into which they might leap, but the Peppermint Gum was growing on the very edge of a cliff and there were no other branches within reach.

They were, then, in extreme despair, when a passing bird observed their plight.

'Fly! Fly!' cried this well-meaning, but feather-brained creature for, of course, that was exactly what a bird would have done.

BUT possums cannot fly and if these three had been in their right minds they would certainly not have listened to such nonsense. But to those in a desperate situation, any advice is likely to seem good, and so it was, that without even a first thought, let alone a second one, those three, foolish, terrified possums launched themselves into the air over the edge of the cliff, vainly waving their paws and tails in a frantic effort to fly. Of course, it was all quite futile, and the poor creatures landed splip! splup! splop! in a row on a flat rock, half-way down the cliff, and there they lay all spread out and very still indeed.

Hours passed, the daylight died and night fell, and still they lay there, stunned and knowing nothing; which was just as well, because a mighty storm raged all around. Black, sullen clouds built up in the sky and lightning raced among them and hurled deadly bolts to the earth. Thunder and wind shook the forest with deafening violence. But the possums knew nothing of all this. Nor did they know that the great old, hollow Peppermint Gum shivered and shuddered above them, and at last bowed to the roaring storm and toppled right over the cliff. It rolled over them as they lay on the ledge of rock, flattening them out like a rolling pin on pastry, before it crashed into the valley below. It was certainly just as well that they did not know that.

The storm had died away except for a few fitful gusts of wind, when the small possum at long last opened his eyes. He was surprised that he was still alive, and even more surprised to find that, though he was so squashed and sore, he could still move all his limbs and even his tail, although the fur had been quite scraped off the top of it. He turned to speak to the medium sized possum and he could scarcely believe his ears, because his soft, small, sighing voice seemed to catch in his throat and came out in sudden gasps 'chit! chit! chit!'

THE medium sized possum awoke at the sound, and very, very carefully felt himself all over, too. He was flattened out in a most strange manner, but his limbs and tail were all unbroken. He turned to the small possum with a hiss and an excited chattering, only somehow the chattering was more like a whirring and it ended in a surprising screech. His voice-box had been affected, too.

At this, the large possum opened his eyes and sat up. Strangely enough he was not quite as flattened out as the other two in front, though his hindquarters had suffered just as much. Luckily, like them, he could find no broken bones. But his voice was most startingly changed. His rather pleasant, excited, shrill top notes had become a blood-curdling, gurgling shriek — there was no other name for it!

So they sat there, thankful to be alive, but very perturbed at the changes in their shapes and voices. Furthermore they were cold and very hungry, and they wondered how, if ever, they would get off the cliff ledge and find another friendly gum tree.

They were peering anxiously over the edge of the flat rock, when a sudden, strong gust of wind struck spitefully at them and — oh! horrors! — it toppled them off! Once again they were hurtling through space, and this time surely nothing but a miracle could save them, for it was a long, long drop to the valley below; and a miracle it was, indeed, that those three possums did not fall 'splip! splup! splop!' to their deaths. For the loose skin at the sides of their bodies had been pressed out into a kind of frill, which reached from fore-limbs to hind-limbs, and when they stretched out, this frill opened like a parachute and stopped them from crashing to earth. Their flattened, spread bodies were just like

Victorian Treecreepers and Sittellas

By L. G. Chandler

Of the nine Australian treecreepers four are found in Victoria. One, the Brown Treecreeper, is common over a considerable area of Victoria; the Whitethroated is to be seen in the eastern and southern sections of the state, and the other two, the White-browed and Red-browed, are rarer. The White-browed is confined to the northwest, and the Red-browed to the southeast and east and its range extends into southern Queensland.

They are often called woodpeckers by local people on account

Black-capped Sittella on nest.

THE THREE POSSUMS — *Continued*

three kites, and like kites they floated across the valley and landed 'plip! plup! plop!' among the branches of another friendly eucalypt tree; and was there ever a 'chit! chiting!' and screeching and shrieking with excitement, then. No longer were they ordinary run-of-the-mill possums! They were Gliding Possums — the first ever!

That small possum with the fur scraped off the top of his poor tail, so that there was only a fringe on either side was the very first Feather Tail Glider. His tiny descendants have the same shaped tail, to this day, and they drink the nectar of gum blossoms and eat moths and other soft-bodied night insects, and they say 'chit! chit!' in small, explosive voices. When they want to change trees, they climb to a high branch, bunch themselves and then launch themselves into space, their side frills spread out, and their tails acting as rudders.

That medium sized possum was the ancestor of all the medium sized gliders — the Sugar Gliders, the Squirrel Gliders and the Yellow Bellied Gliders. To this day, they all eat whole gum blossoms and any insects they can find, even hard-shelled ones, and they hiss and whirr and occasionally screech among the trees at night; and, of course, they glide from place to place just like the Feather Tail.

The large possum was the ancestor of all the Great Gliders. Their side frills are still wider at the back than at the front. They hold the record for long distance gliding and they still eat gum blossoms and tender leaves and are not partial to insects. They are particularly fond of the leaves of the Peppermint Gum and at night they hiss and gurgle and shriek in a positively blood-curdling manner.

SHOULD you observe any of these pretty, shy, nocturnal animals, especially when they are gliding, you will see, at a glance, that they are *in fact* nothing more or less than flattened out possums, as has been said. However, should you be extra doubting, ask any reputable zoologist and he will tell you that the Gliders are veritable descendants of the possums, though he may not know all the details, as set out here.

Brown Treecreeper at nesting hollow.

of their habit of tapping on the bark of trees for spiders and insects, but we have no true woodpeckers in Australia. Treecreepers and sittellas in no way resemble each other in habits or appearance. One remarkable difference is in their feeding habits. Although both species seek their food in the bark of trees, treecreepers when flying from one tree to another usually settle on the bole of a tree near the ground and work while tapping with their beaks for spiders and insects, in a spiral manner upward. Sittellas work downward and the knowledge of this different method of seeking their food is a valuable guide to a stranger to birdlife who sees them for the first time. While sittellas do not leave the trees when feeding, some treecreepers often seek insects on the ground.

Six species of sittellas are distributed throughout Australia, but only two are found in Victoria, the Orange-winged and the Black-capped. Neither is common, and a naturalist is always delighted when he comes upon a small company of these busy little birds, usually about five or six individuals. They seem to be forever on the move, and after working rapidly down and around the limbs of a tree they may fly hundreds of yards before settling again. Both of the Victorian birds whose range extends to other states are very similar in appearance when viewed from the ground, and plumage phases of juvenile birds and their quick movements often make their identification difficult. In nesting habits they differ from the treecreepers, and the camouflage and protective resemblance of their nests makes the discovery of a sittella's nest a source of great satisfaction to an observer. In most cases they are found by watching a bird fly to a nest either with nesting material or food for the young. The nest is a most beautiful example of nest-architecture that is only equalled in Victoria by the Pink and Rose-breasted robins. It is a cup-shaped structure built in a dead fork of a tree, and the outside

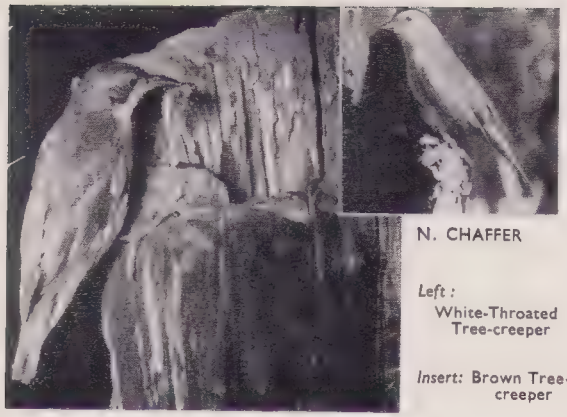
White-throated Treecreeper at nesting hollow.

is draped with small pieces of grey bark one upon the other. The nest from the ground looks like portion of the limb. It is lined with green and yellow lichen and the eggs are perfectly camouflaged in colour to resemble this lining.

In big timber country the nests are often built at a great height from the ground, and I have pointed out a nest to a friend who refused to believe that it was a bird's nest. My first nest of the Orange-winged Sittella was found in the Ringwood district in the early 1900's. It was about fifty feet from the ground and was discovered by seeing a bird fly to it. Ringwood, now a city, in those halcyon days had miles of bush and was teeming with bird-life. It was one of our favourite hunting grounds with the camera.

At that time collecting was fashionable with many ornithologists, and after the nest and eggs were brought to the ground and enthused over for their beauty and the craftsmanship of the nest, my companion took possession of the eggs. I took photographs of the nest and eggs, and rather reluctantly saw the eggs wrapped up in cotton wool. For a few years I had been a collector myself, but the buying of a camera—a cheap one—and the taking of my first bird photographs, swung me for life against collecting and the musty science connected with it. Except in our Australian museums, collecting should be totally banned. With our bird-life already dangerously depleted by hazards such as bush-fires, settlement, indiscriminate shooting, poison campaigns, foxes, cats, etc, it is not in the interests of conserva- destruction by the five expeditions that are coming from the British Museum to collect our birds and their eggs.

After the first world war I settled in the northwest of Victoria, and there for the first time in the bush I became acquainted with the Black-capped Sittella and its nest.



N. CHAFFER

Left: White-Throated Tree-creeper

Insert: Brown Tree-creeper

One that I photographed settled down low in its nest and half closed its eyes in an endeavour to make itself look like portion of the tree fork. Lively little birds with their merry chatter, I always feel a glow of warmth sweep through me when I watch them seeking for their food or in other activities.

Most of the nests of treecreepers are built in a hollow tree, and in the case of the Brown Treecreeper sometimes in a hollow stump close to the ground. The nests are composed mainly of bark, rootlets, fur, vegetable down and dried grasses according to the species and locality. The eggs of our Victorian birds are prettily spotted with pink and purple. The White-throated and Red-browed species are found in the big timber, and the nest may be located hundreds of feet from the ground.

The Brown Treecreeper is a master in leading an observer away from the actual nesting-site. When it knows it is being observed it will enter hollow after hollow, and as the watcher approaches it will fly away with noisy notes. In spite of this I have not found treecreepers difficult to photograph.

With a friend I saw my first Red-browed Treecreeper on Olinda Creek near Lilydale in 1910. It was, I think, the first southern Victorian record of this species. It has pretty tremulous notes which once heard are never forgotten. Later, I heard and saw these birds in different parts of the Dandenong Ranges, and also at Healesville and Warburton.

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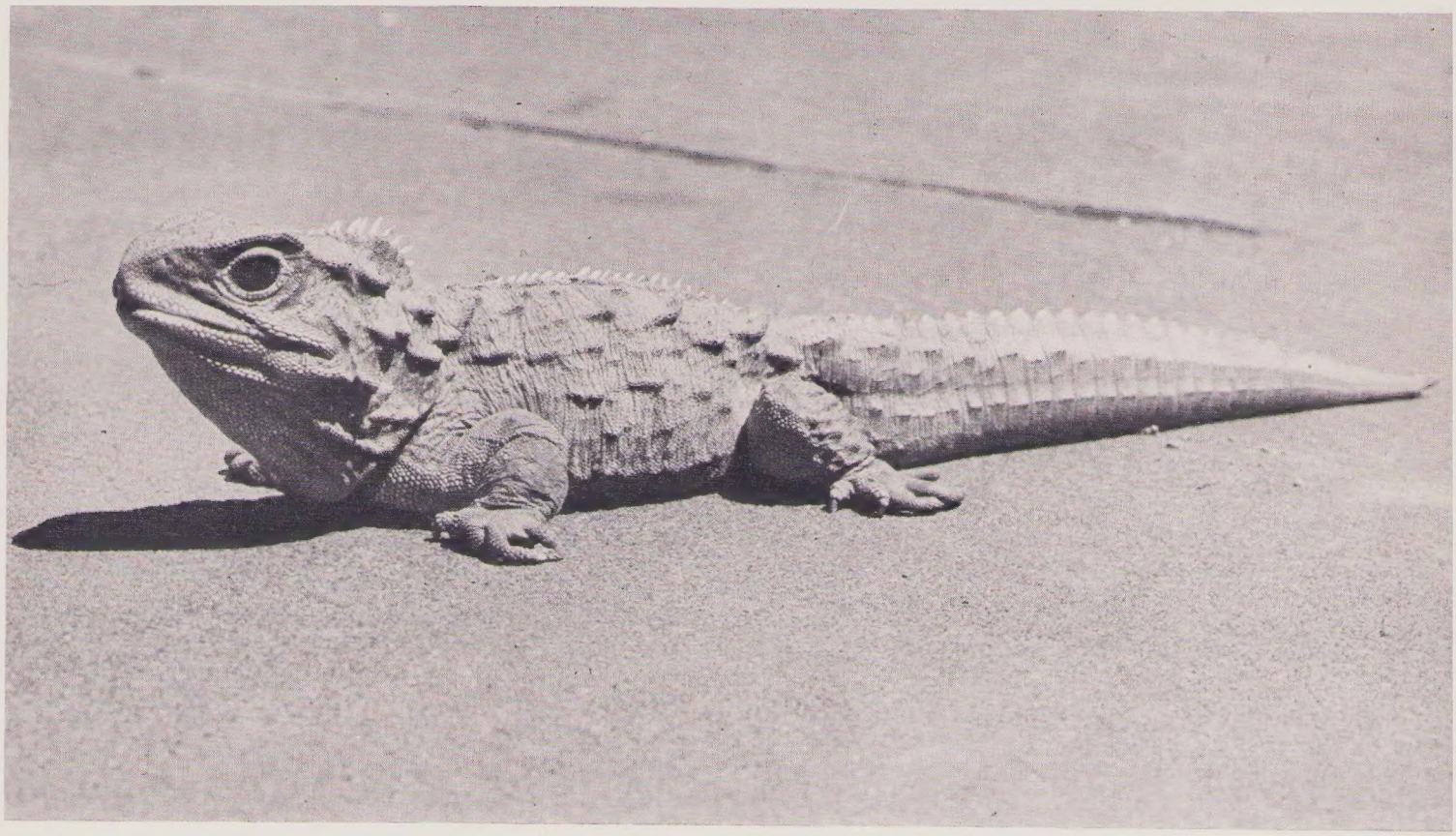
By John Sidney

The Tuatara is a Genuine Prehistoric Monster

LIVING a lazy, beachcombing life on some New Zealand off-shore islands, is the world's only genuine prehistoric monster. This is the handsome lizard-like tuatara, the last survivor of the Age of Reptiles and which has come down unchanged from the Triassic Period of some 200 million years ago. Its ancestors saw *Tyrannosaurus,* the great flesheater, *Brontosaurus* and *Brachiosaurus,* that fifty-ton vegetarian that could look over a three-storey building. The tuatara saw them all come and go; it watched this once dominant form of life give way to the more efficient mammals.

Although it resembles lizards in some ways, it is more primitive than any and is, indeed, a reptilian 'missing link.' It could be the ancestral type from which today's reptiles and lizards have evolved. Fossils similar to *Sphenodon punctatus* have been found in rocks far back in the Age of Reptiles. For instance, in the temple region there are two perforations in the bones roofing the skull and giving play to the jaw muscles. Lizards



have lost one of the temple openings but both have been retained in the skull of today's reptiles.

Growing to three feet in length, the short-legged adult tuatara is a picturesque creature with a body colour of greenish-brown, spattered with dark green and sulphur-yellow spots and splotches. A large crest of brilliant white spines grows along the neck and back and has earned for it both its scientific name *punctatus* and the Maori name of tuatara, meaning 'peaks on the back.' The ruffled white crest gives the tuatara a deceptively formidable look — the spines are soft and flexible. The tuatara's big heavy head has two large, brilliant eyes. The skull is very similar to a bird's. Even more singular is its pineal, or so-called eye. Common in many back-boned animals and thought to be the remnant of a second pair of eyes, the pineal eye is in its most perfect form in the tuatara. Possessing all the characteristics of a true eye, this eye is covered by skin and cannot be seen except in very young tuataras.

Once found all over the North Island of New Zealand, the tuatara only survives on some sixteen islets off the coast of North Auckland and the Bay of Plenty and on some islands in Cook Strait. The settlement of the North Island and the introduction of predators such as stoats, weasels, foxes, cats which have gone wild, and dogs, led to its rapid extinction there. Only isolation permitted this archaic creature to survive so long; it had been comparatively free from competition with more efficient animals. New Zealand has been separated from other

land bodies for, perhaps, seventy million years and the more efficient mammals, and, particularly, the flesh-eating ones, did not reach New Zealand, which has no native animals other than some bats and, of course, sea animals. Elsewhere throughout the world, the more progressive types of animals helped in the extinction of relatives of the tuatara. The tuatara is now absolutely protected and its future will depend on its island sanctuaries being left undisturbed.

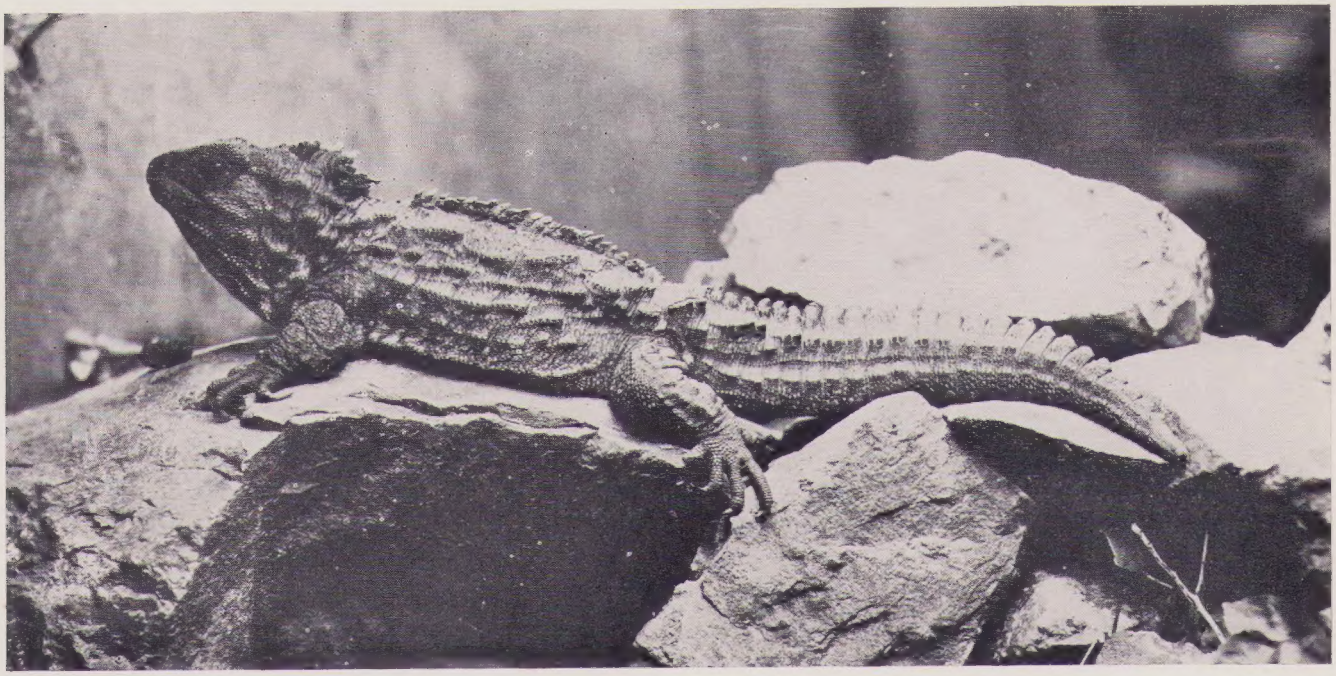
THE tuatara is a somewhat sleepy creature. Even when you pick up a sleeping one, it awakens only slowly. Then it may bite. It is capable of a short wobbling burst of speed when frightened or pursuing its prey.

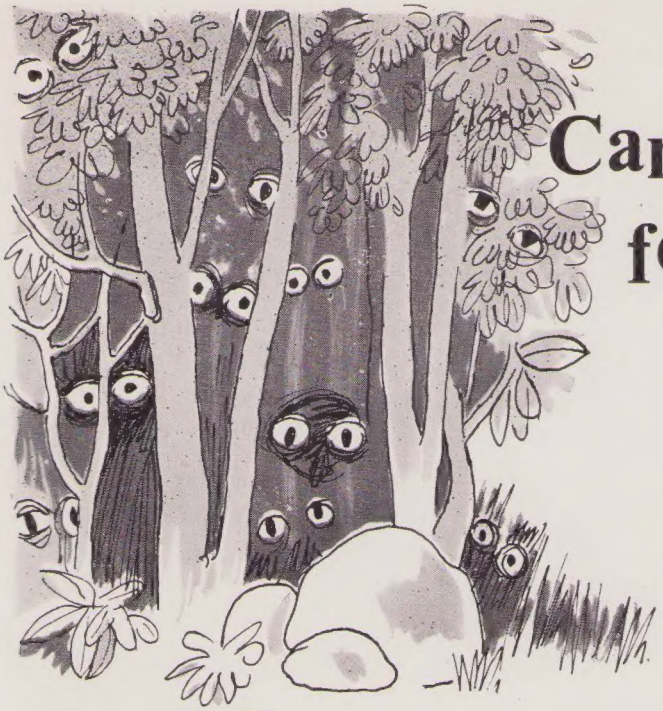
It hunts mostly at night and feeds somewhat austerely on beetles, grasshoppers, spiders, flies and other insects. Because of its lazy life, it doesn't need much food; some in captivity seem to be quite happy with about two snails or a few pieces of raw meat a day during the summer. The appetite is keenest in summer; by May (the down-under autumn) the tuatara has usually lost interest in food and soon retires to hibernate until spring.

Only the mating season seems to stir it into much activity, when it will fight occasionally with another male and bite quite savagely. It is not only strong and handsome — it is silent — its only call is an infrequent grunt or croak. It takes an easy course with its housing and lives in the nesting burrows of the petrels, those ocean-ranging birds, which breed in the tuatara's islands during summer. The tuatara has the burrow to itself during the winter, and because of their different habits, shares it amiably enough with the birds during the summer. When the petrels have nestled in on their eggs for the night, the resplendent, ruffled tuataras emerge from the burrows to sup on insects. Sometimes, when it can't find a burrow or the petrel is too bad tempered, the tuatara digs a rather shallow hole in sand or loose shingle.

THE female lays between ten and fifteen soft white eggs, with semi-calcareous shells and about one inch long, in a trench or shallow burrow covered with leaves and earth. They are left unattended and are laid in November, in the late spring, and do not hatch until thirteen months later during the following summer. The development of the embryo is rapid for about four months and then almost stops until the following spring. This 'hibernation' within the egg is rare and is found only among a few reptiles. At first, the young tuataras, about six inches long on hatching, rather resemble tortoises; only much later do the more lizard-like characteristics appear. Their chocolate-brown bodies are marked with longitudinal and transverse bands of grey and white — a protective pattern which they lose as they merge into the splendid adult form. Unlike the adults, the young tuataras are very active. They grow quickly at first but much slower in succeeding years.

Perhaps these lone survivors from the Age of Dinosaurs have some secret of longevity? Some in captivity have lived for over fifty years and the Maoris claim that they do, in fact, live for hundreds of years.





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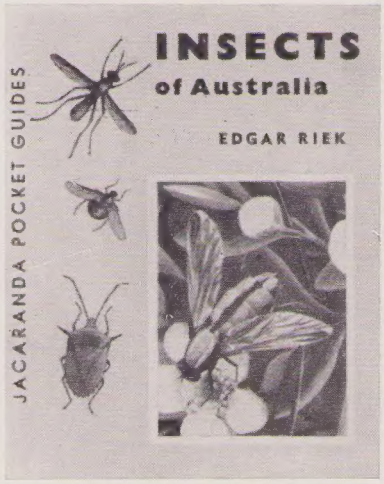

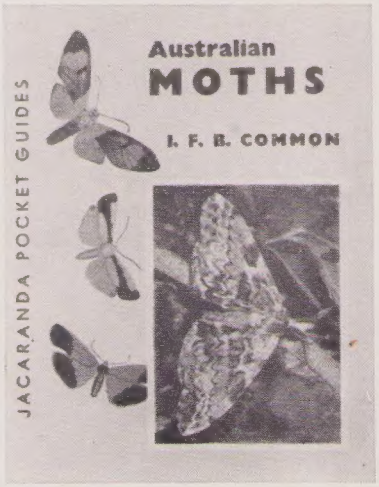

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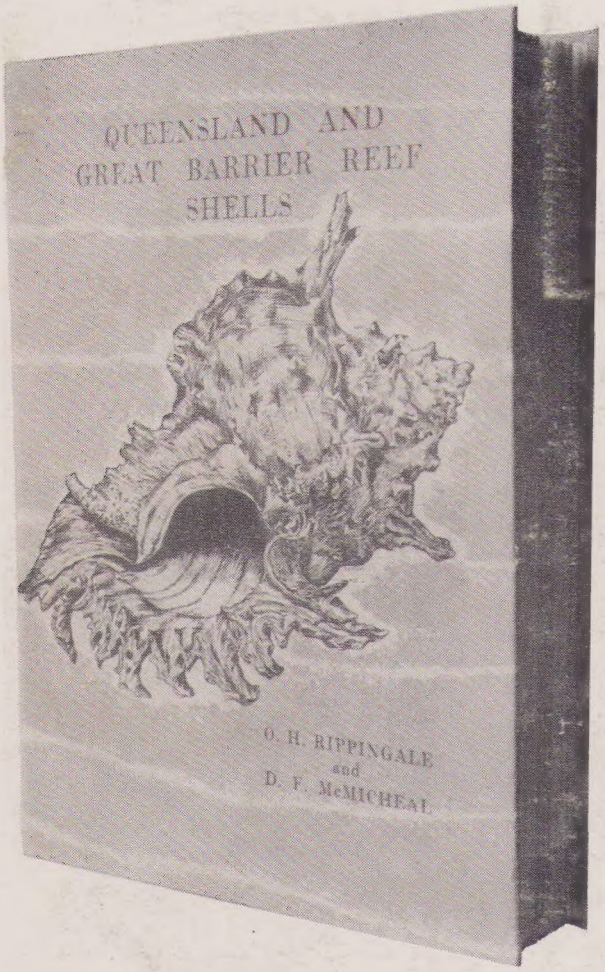

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